The Oil and Gas Journal

PRODUCING REFINING MARKETING

VOL. 24. NO. 48. TULSA, OKLAHOMA, APRIL 22, 1926

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TABLE OF CONTENTS

SPECIAL ARTICLES

Crude Production Becoming Stationary ... 27
By Andrew M. Rowley
Big difference in situation now and this time last year. Deeper drilling factor deserving consideration.

Buses Use as Much Gasoline as 700,000 Cars ... 29
By L. M. Fanning
Survey shows consumption runs from 4,000 to 10,000 gallons a year. Covered 1,900,000,000 miles.

Spring Meeting of Eastern Refiners ... 30
By George Turnbull
Sessions of National Petroleum Association at Cambridge Springs, Pa., discuss problems.

Preventing Steam Losses at Refineries ... 31
By H. S. Bell

Arkansas and Louisiana Refining Area ... 32
By Charles E. Bowles

Gasoline Specifications (Editorial) ... 34

Oklahoma's Largest Initial Producer ... 73

An Unexpected Record Maker ... 75

Just How Big Is a 26,000-Bbl. Well ... 76
By James McIntyre

Twelve Years of Scattered Deep Drilling ... 77
By James McIntyre

Deep Pay District in Garber Pool (Map) ... 78

Equipment Used at Record Gusher (Photographs) ... 80

The Boys Who Brought in the Big Well (Photos) ... 82

Cross Section of Garber Field ... 86

Garber Well Greatest in Refining Value ... 88
By C. O. Willson

Deep Tests Opened Vast Stores of Oil ... 90
By Andrew M. Rowley

Rotary Material Used in No. 27 Hartley (Photographs) 92

Venezuelan Crude Production 80,000 Bbls. Daily ... 97
By Special Correspondent

Garber's Structural Conditions ... 98
By C. D. Lockwood

FIELD OPERATIONS

Late Fields ... 38

North Central Texas ... 39
By J. L. Dwyer

Gulf Coast ... 41
By P. L. McGreal

New Mexico ... 41
By Special Correspondent

Oklahoma ... 44
By C. D. Lockwood

Kansas ... 44
By C. D. Lockwood

Louisiana-Arkansas ... 48
By James H. Dameron

East Central Texas ... 48
By Special Correspondent

Mexico ... 50
By George Blardone

Canada ... 52
By Victor Lauriston

Rocky Mountain Area ... 52
By Frank B. Taylor

Southwest Texas ... 54
By B. D. Stevenson

California ... 56
By L. P. Stockman

Kentucky-Tennessee ... 58
By Vern T. Whitney

Central West ... 58
By Whit

Pennsylvania-West Virginia ... 60
By D. S. Wakenight

REFINING AND MARKETING

Oklahoma Gasoline Market Improves ... 28
By Neil Williams
Favorable weather causes firmer tone. Exporters aid higher gravities. Some grades of fuel, gas oil and distillates slightly easier.

Technical Questions Answered ... 36
By C. K. Francis

Generation of Steam at Refineries ... 134
By H. A. Ross

Adequate Refining Capacity Needed ... 138
By Chas. L. Parmelee

Better Demand in Chicago Territory ... 142
By J. B. Waldo

Eastern Market Generally Strong ... 142
By N. O. Fanning

Fluctuations in Kerosene Consumption ... 144
By C. O. Willson

Refining and Marketing News ... 146

Plant Operators' Page ... 148

Refinery and Crude Prices ... 150-151

Tank Wagon Quotations ... 152

Need Workable Cost Accounting ... 160
By P. S. Tarbox

Determine Hydrocarbons in Gasoline ... 162
By Gustav Egloff and Jacque C. Morrell

ARTICLES OF GENERAL INTEREST

The Advertisers' Index ... 25

Men Known in Oildom and Personals ... 62

Natural Gas Developments ... 66

Equipment and Supplies ... 68

Activity in Steel Unprecedented ... 68
By B. E. V. Luty

Demand for Tankers Active ... 100

Confusion in Corporate Taxes ... 108
By Reinhold Hekeler

Standardization of Burners on Quality of Oil ... 114
By H. W. Camp

Story of Oil Pipe Line by Veteran ... 120

Engineers National Committee ... 126

Classified Want Advertisements ... 140-141

Oil Securities Irregular and Inactive ... 154
By N. O. Fanning

Gulf Coast Shipments ... 170

What and Where to Buy ... 181-182-183

Crude Petroleum Statistics ... 184

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Refinery Section Starts on Page 142

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Better Demand in Chicago Territory ... 142
By J. B. Waldo

Eastern Market Generally Strong ... 142
By N. O. Fanning

Fluctuations in Kerosene Consumption ... 144
By C. O. Willson

Refining and Marketing News ... 146

Plant Operators' Page ... 148

Refinery and Crude Prices ... 150-151

Tank Wagon Quotations ... 152

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By H. W. Camp

Story of Oil Pipe Line by Veteran ... 120

Engineers National Committee ... 126

Classified Want Advertisements ... 140-141

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By N. O. Fanning

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What and Where to Buy ... 181-182-183

Crude Petroleum Statistics ... 184

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Refinery Section Starts on Page 142

Crude Output Becoming Stationary

Highest daily average estimated production week ended May 30, 1925, 2,347,984 bbls. Lowest in 1925, January 3, 1,911,730 bbls.

Big Difference in Situation Now and This Time Last Year. Deeper Drilling Factor Deserving Consideration

By Andrew M. Rowley

Highest daily average estimated light oil production in 1925, week ended January 17, 1,525,220 bbls. Lowest in 1925, July 18, 1,374,173 bbls.

With production of crude oil in all fields of the United States maintaining a fairly steady average, well below the 2,000,000-barrels-a-day mark which featured all of last year from the middle of April, and the output of newly discovered producing horizons serving only to offset the natural decline in older wells, the general situation is becoming stronger each day as the period of maximum demand approaches and no new big producing field is in sight to menace conditions. A glance at the graph below will show immediately the difference in the general situation now and what it was a year ago. At that time the Smackover Field in Arkansas was beginning to pour its flood of crude upon the market leading to the record peak of crude oil production in the United States. Fortunately for the entire industry then, oil men readily appreciated the difference between heavy and light gravity crudes and Smackover's vast outpouring of heavy gravity oil had but very little effect upon prices.

Another big difference in the situation now and that of last year and at this period in other previous years is the fact price increases were postponed this year until there was a real need for a rise. As a result, few if any operators now expect crude prices to be reduced during the early summer as has been the custom in years past, but, on the other hand, many believe further increases may reasonably be expected and there seems to be but little doubt that increases will be announced if consumption shows a normal increase and production continues stationary as at present.

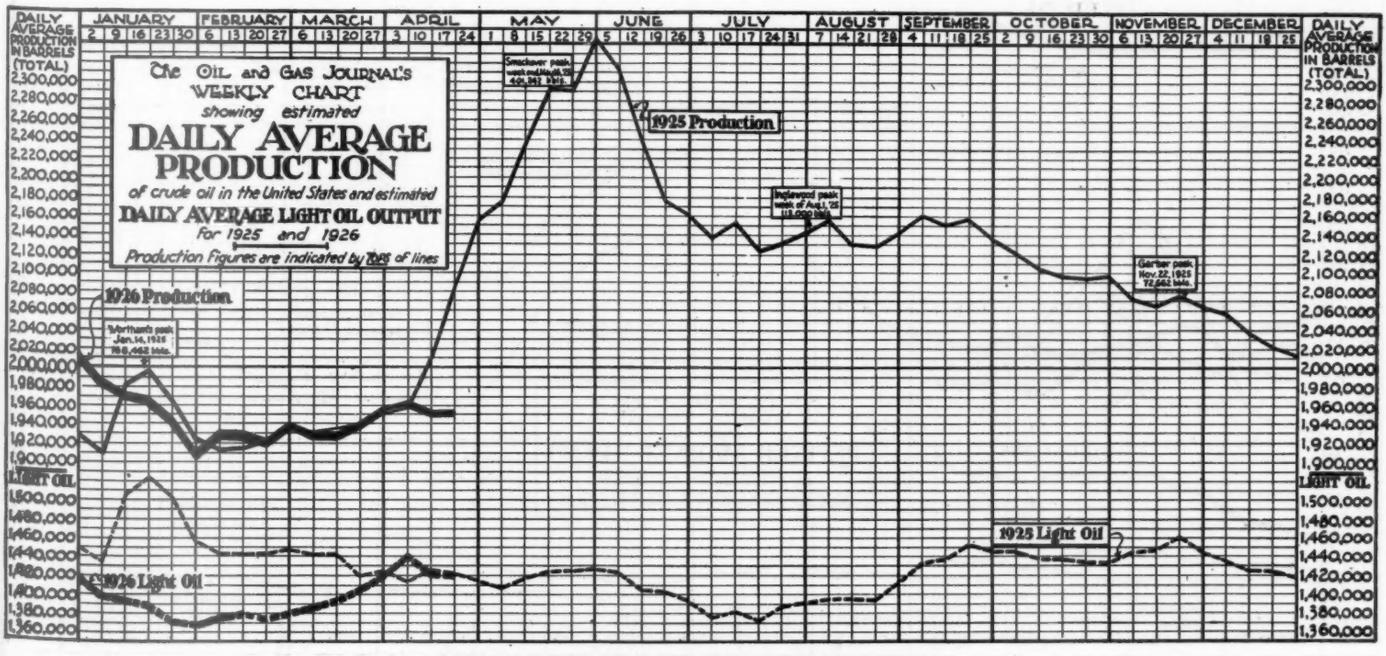
The big production being procured in wells drilled to deep sands in different sections of the country is a matter deserving of earnest consideration by the industry as a whole for much of the new production now being found is coming from these deeper pay sands and there is no telling when one of these horizons may become another Garber. The outstanding feature in the major producing areas during the past week was the completion of big wells in deeper sands, two good wells being brought in in the Wewoka deep sand area in Oklahoma, another big producer in the Boling Dome Field in the Gulf Coast section of Texas, while one of the largest deep sand producers in the world was completed in the Ventura Avenue Field in California.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity crude oil in the United States for week ended April 17, and a comparison with the previous week follows:

	Apr. 17		Apr. 10	
	Light	Heavy	Light	Heavy
Oklahoma—				
Tonkawa	37,815	.....	38,730	.....
Burbank	41,705	.....	41,635	.....
Other Osage Fields	32,885	.....	32,810	.....
Cushing and Shamrock	21,890	.....	21,905	.....
Bristow and Eastern Bristow	30,135	.....	30,045	.....
Cromwell	18,410	.....	18,540	.....
Papoose	12,585	.....	12,465	.....
Garber	33,130	.....	37,835	.....
Blackwell-Braman	15,715	.....	16,440	.....
Davenport	17,040	.....	18,480	.....
Wewoka	31,645	.....	32,795	.....
Northern Miscellaneous	99,595	.....	100,285	.....
Southern Fields	66,485	.....	67,220	.....
Total Oklahoma	459,035	.....	469,185	.....
North Louisiana	50,420	.....	51,140	.....
Arkansas—				
El Dorado and Calion	7,425	.....	7,460	.....
Smackover Light	17,930	.....	17,830	.....
Smackover Heavy	.....	135,185	.....	133,753
Miscellaneous	10,805	.....	10,410	.....
Total Arkansas	36,160	135,185	35,700	133,753
North Central Texas	176,928	.....	172,175	.....
Powell	30,700	.....	29,760	.....
Mexia, Currie, Richland, etc.	16,140	.....	14,745	.....
Wortham	9,800	.....	10,640	.....
Kansas	102,150	.....	101,210	.....
Total Mid-Continent Area	881,333	135,185	884,555	133,753
Gulf Coast	.....	94,362	.....	91,764
Southwest Texas	.....	39,443	.....	39,873
Eastern	99,250	.....	97,870	.....
Rocky Mountain Area	108,485	.....	106,690	.....
California—				
Santa Fe Springs	49,500	.....	49,000	.....
Long Beach	105,000	.....	108,000	.....
Huntington Beach	45,000	.....	44,000	.....
Torrance	5,000	23,000	5,500	23,000
Dominguez	20,000	.....	21,000	.....
Rosecrans	19,000	.....	20,000	.....
Inglewood	29,000	22,000	29,500	22,000
Remainder of State	63,000	218,000	60,000	219,000
Total California	335,500	263,000	337,000	264,000
Total United States	1,424,568	531,990	1,426,115	529,390
Grand Total		1,956,558		1,955,505

Total Increase, 1,053 Bbls.; Light Oil Decrease, 1,547 Bbls.



WHAT AND WHERE TO BUY—PAGES 181-182-183

Oklahoma Gasoline Market Improves

Favorable Weather Causes Firmer Tone. Exporters Aid Higher Gravities. Some Grade of Fuel, Gas Oil and Distillates Are Slightly Easier

By Nell Williams

While apparently marking the climax in the fuel oil, gas oil and distillate picture, the past week in the Oklahoma (Group 3) refined market saw a renewal of interest in kerosenes and the development of a much improved tone in gasolines.

A period of favorable weather accompanied by a slightly increased jobber demand was sufficient to cause refiners to tighten up on motor fuels, and an advance in the tank wagon postings of kerosene throughout the territory of the Standard Oil Co. of Indiana added new strength to that already strong product.

On the other hand, the same period of favorable gasoline weather was reflected in a noticeable slackening of domestic consumption of furnace oils, relieving slightly the extreme tightness of some grades of Oklahoma fuel oil, gas oil and distillates.

Until Tuesday, the improved tone in gasolines had resulted in little more than a steady firming of these products and only a gradual advance in quotations. Trading still lacked much of being active although there was a better demand than usual.

Refiners on the whole advanced quotations only from an eighth to a quarter cent on motor fuel during the week and in most cases were ready to sell at these prices for immediate shipment.

On the other hand, the majority of refiners were reluctant to make sales for future delivery even at higher prices. In their opinion, it was a matter of having everything to gain and little to lose. With every indication that spot markets would be stronger, few felt it necessary to sell at prices now which might have a tendency to hamper May sales.

Warnings issued to jobbers the past week from headquarters of the National Petroleum Marketers Association not to let their tanks run unseasonably low were taken by many refiners as a sign of better markets. Jobbers were advised not to speculate but on the other hand not to withhold their usual requirements for this time of year.

In the bulletin issued to the jobbers, it was pointed out that, although consumption had been slack due to a late spring, when the season opens in full force there may be a sudden and bigger demand than would have been otherwise and jobbers should not be caught unprepared.

Future Brighter

This bore out the belief of most refiners, as expressed before, that there is a big waiting demand for motor fuels which will be released just as soon as roads throughout the northern states get in good shape. To this belief is attributed a good deal of the strengthening of gasoline markets in Group 3 the past week. The period of good weather led refiners to the opinion that spring at last had come and would be followed in the near future by a rapid increase in demand on the part of the consuming public.

Some light snows and rains in some northern states Saturday and Sunday gave a slight setback to conditions but on the whole it was the opinion that this was just a last winter flurry and would not cause Oklahoma markets to sag again.

A few marketers are known to have some long purchases of U. S. Motor gasoline which must be ordered from refineries within the next week. Refiners see little danger in this as most of these orders were placed at prices not much below present market quotations and as a result will not be in a position to compete seriously with the refiners' prices.

In addition, most refiners maintain they are in a fairly good position. A survey of Tulsa refiners showed that many are completely sold up for the remainder of the month. Another large refiner said he had only between 30 and 40 cars to be disposed of before May 1, which, if there is any buying at all, will not be difficult to handle.

Renewed export interest also was shown during the week when Mid-Continent representatives of two large export companies again entered the market both for 60-62 and 64-66 gasolines. Late Tuesday orders for between 1,000,000 and 1,500,000 gallons of these products had been placed with Oklahoma and north Texas refiners.

Under these conditions the trend of all gasoline prices was upward. The 58-

(Continued on Page 155)

REFINED MARKET BAROMETER

Refined markets on the whole showed improvement during the week. Better weather conditions in most sections of the country caused a firmer tone in gasoline in the Mid-Continent and Middle West refining centers which was reflected in other areas, except the Pacific Coast where consumption is below normal. Kerosene was stronger in all districts, being given added impetus in the Middle West, Mid-Continent and Rocky Mountain states by general tank wagon advances. Fuel oil, gas oil and distillates continued strong although the extreme tightness which has been enjoyed in some sections for several weeks eased up slightly, followed a small decline in some lower grades. The warmer weather which improved the gasoline situation also served to reduce the domestic demand of furnace oils. The increasing strength of natural gasolines in the Mid-Continent was offset by declines on the Pacific Coast. Lubricants were slightly more active.

Mid-Continent—Slightly improved domestic demand and some export buying causes better tone in gasoline markets and advancing prices. Kerosene stronger following tank wagon advance. Fuel oil, gas oil and distillates slightly easier with prices off on lower grades of fuel. Natural gasoline inquiries increase with higher prices. Lubricant demand improves.

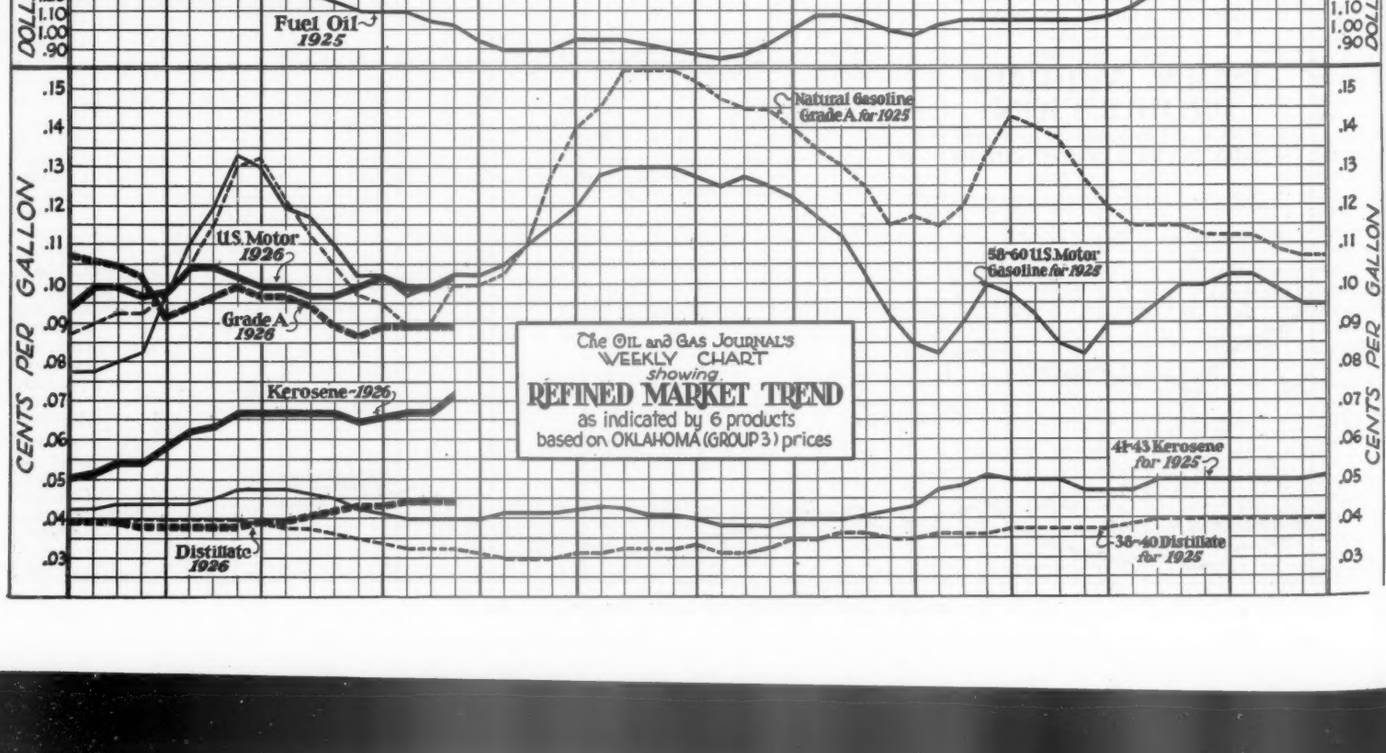
Atlantic Seaboard—Refined market generally strong but gasoline offerings plentiful. Kerosene stronger. Gas oil unchanged. Diesel oil moving steadily and bunker oil in fair demand. Lubricant prices holding but demand still light. Wax inquiries off. Petrolatum normal.

Pennsylvania—Refined markets firmer. Gasoline prices advanced. Kerosene active. Lubricants in better demand.

Chicago—Better gasoline demand expected soon. Market firmer. Fuel oil at standstill. Distillates off due to warmer weather. Gas oil supply limited and prices holding. Kerosene higher. Lubricants active.

California—Natural gasoline market weakens with Mid-Continent offerings on increase. Gasoline sales low. Other products unchanged.

Gulf Coast—Unchanged.


JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER
DOLLARS PER BARREL
36° Crude for 1926
24-26 Fuel Oil for 1926?
Fuel Oil 1925
36° Crude Oil for 1925
Prairie O&G Co's posted price in Mid-Continent
CENTS PER GALLON
U.S. Motor 1926
Grade A 1926
Kerosene-1926
Distillate 1926
Natural Gasoline Grade A for 1925
58-60 U.S. Motor Gasoline for 1925
41-43 Kerosene for 1925?
38-40 Distillate for 1925
The Oil and Gas Journal's WEEKLY CHART showing REFINED MARKET TREND as indicated by 6 products based on OKLAHOMA (GROUP 3) prices

Buses Use as Much Gas as 700,000 Cars

Survey Shows Consumption Runs From 4,000 to 10,000 Gallons a Year. Covered 1,900,000,000 Miles Last Year

By L. M. Fanning

In terms of gasoline consumption one motor bus on city streets or country highways at the present time is probably equivalent to 10 passenger cars. The one-to-ten ratio is given as an average. Certain types of buses consume much above the average. For instance, each passenger bus in urban and interurban service is probably equivalent to about 20 pleasure cars, so far as annual consumption of fuel is concerned. The figures are important in view of the great expansion that is occurring in bus transportation.

According to a survey made jointly by Bus Transportation and the National Automobile Chamber of Commerce and just issued, there are approximately 70,000 buses in the United States. This compares with an estimate of 53,000 established a year ago. The types of buses indicate the varied conditions of service affecting gasoline consumption and are as follows: Motor carriers, intrastate and interstate; electric railways or subsidiary buses; steam railroad or subsidiary buses (these being the common carrier or general passenger buses); hotel buses, sightseeing buses, railroad transfer buses, industrial or factory buses and schoolhouse (these comprising the noncommon carrier buses).

It is estimated that buses covered about 1,900,000,000 miles last year, and that on an average a bus makes six to seven miles to a gollon of gasoline. At seven miles to the gallon, an annual consumption of 271,000,000 gallons for buses is indicated, and with 70,000 buses in operation the indicated average annual gasoline per bus is about 4,000 gallons. The estimated average annual consumption per passenger car is about 400 gallons.

Figures furnished The Oil and Gas Journal by Bus Transportation estimate the mileage covered by different classes of buses as follows:

	Number of Buses	Annual Mileage
Passenger buses	27,000	1,637,000,000
School buses	27,000	162,000,000
Sightseeing buses	2,500	20,000,000
Industrial buses	1,400	11,000,000
Hotel buses	1,000	7,000,000

Mileage per Gallon

The mileage for passenger buses indicates an annual consumption of gasoline per bus of 7,300 gallons, or equivalent to the annual average consumption of 18 pleasure automobiles. Many urban and interurban bus lines are known to be using substantially larger quantities. In a survey on bus growth published last year by The Oil and Gas Journal figures on gasoline consumption by a fleet of 600 buses of the Public Service Transportation Co. of New Jersey indicated an average consumption per vehicle of 10,000 gallons a year.

Operated in cities where buses are forced to make frequent stops, the gasoline consumption of buses per mile is relatively high. Average bus performance in New York, St. Louis and Chicago show less than 6 miles per gallon of gasoline. All the major bus companies are devoting a great deal of attention to the fuel question and are bringing about economies which are cutting down gasoline consumption. For instance, the Chicago Motor Coach Co. buses in 1924 averaged 7,867 gallons of gasoline per bus and in the first five months of last year consumption ran at the annual rate of 6,518 gallons per bus.

Larger consumption per motor vehicle registered in the United States indicates the effect of the bus on total consumption. The indicated average consumption per car in 1925, using registration figures as of December 31, 1925, in conjunction with the Bureau of Mines, domestic gasoline consumption figures for 1925 was 457 gallons, compared with 444 gallons in 1924. The comparison follows:

Car Registration and Gasoline Consumption in United States

	Motor Vehicles Registered	Consumption (Gals.) Domestic	Consumption (Gals.) Indicated per Car
1924	17,500,000	7,770,000,000	444
1925	20,000,000	9,362,000,000	468

The increased gasoline consumption per car indicated by these figures is confirmed in comparing state gasoline consumption and car registration figures, where such comparisons are possible. As state gasoline consumption figures are obtained in almost every case from gasoline sales for motor car use they are the most reliable index to actual motor vehicle consumption. A comparison of 30 states shows the following:

Car Registration and Gasoline Consumption in 30 States

	Motor Vehicles Registered	Consumption (Gals.) Total	Consumption (Gals.) Indicated per Car
1925	7,702,000	3,521,000,000	457
1924	6,631,000	2,948,000,000	444

Conservative Estimate

Figures on the number of buses in operation in the United States together with the classes of buses in service have until this year been largely pure estimates. The recent survey giving the total number as 70,000, states that the figure has been arrived at conservatively and is based upon actual studies which account for 80 per cent of the total. The actual census of buses for which documentary evidence is available amounts to 57,871 as compared with 40,096 a year ago.

This year's census shows a slight falling off in the number of intrastate motor carriers. Part of this decrease is due to the method of listing. Last year interstate motor carriers were not shown separately. Another factor is the purchase by electric and steam railways of motor carrier lines. Furthermore, the census this year is more nearly an actual count obtained from reliable sources, and in cases from the state regulatory body, whereas when the first census was made partial estimates had to be used when full data was not available. Inasmuch as common carrier buses are under regulation in but 36 states, the census figures are still considerably below the actual number of buses owned. This is due to the difficulty of obtaining statistics when operating companies are not required to report to some central state authority. With this last factor in mind, an estimate of 30,475 buses has been set up for intrastate motor common carriers.

Analyses of Buses

The estimated analysis of buses according to use as of January 1, 1925, and 1926 follows:

Estimated Analysis of Buses According to Use as of January 1, 1925 and 1926

	As of Jan. 1 1925	1926
Common carrier operations:		
Intrastate motor carriers	31,100	30,475
Interstate motor carriers	None	1,500
Electric railways and subsidiaries	3,000	5,150
Steam railroads and subsidiaries	N. C.	375
Total, common carrier operations	34,100	37,500
Non-common carrier operations:		
Hotel buses	1,000	1,000
Sightseeing and tour companies	1,500	2,500
Railroad terminal companies	250	250
Industrial uses	1,075	1,075
Schools (public and private)	15,000	27,000
Other miscellaneous uses	.....	100
Total, non-common carrier operations	18,825	31,925
Total buses—estimated	52,925	69,425

N. C.—Not classified.

The analysis so made indicates that the bulk of the interstate lines are to be found in the New England states, New Jersey and Pennsylvania. New York City is the center of a network of these lines to New Jersey, Pennsylvania, Connecticut, Massachusetts and Rhode Island cities.

Other points of particular significance in this year's census are the increase in the number of buses used by electric railways and their subsidiaries as well as the entrance of steam railroads into the bus field. Further increments are to be expected during 1926 under these classifications. Taken together, all classes of common carrier buses show an increase from 25,531 to 28,145 for the year. Of this total 22,683, or 80.6 per cent, are in the hands of the motor common carriers, while 5,132, or 18.2 per cent, are owned by electric railways, and 330, or 1.2 per cent, are owned by the steam railroads.

School Service

In the non-common carrier field of bus operation, one significant development during the year has been a 100 per cent gain in the number of buses reported in school service. A survey just made by the National Automobile Chamber of Commerce indicates a total of 26,685 buses in school service, as compared with 13,228 a year ago. Undoubtedly some duplication exists with the common carrier, since these buses are not all owned by the schools. Some of them are buses otherwise reported in the accompanying tables but it is doubtful if more than 500 are involved. The survey indicates in some sections of the country, particularly in Massachusetts, as an example, that the school authorities contract with private owners of vehicles specially adapted for carrying school children. There is, however, a growing tendency today to use better designed vehicles for school service.

Classification Census of Buses According to Use as of January 1, 1925 and 1926

	As of Jan. 1 1925	1926
Common carrier operations:		
Intrastate motor carriers	22,616	22,024
Interstate motor carriers	None	659
Electric railways and subsidiaries	2,915	5,132
Steam railroads and subsidiaries	N. C.	330
Total, common carrier operations	25,531	28,145
Non-common carrier operations:		
Hotel buses	237	576
Sightseeing and tour companies	1,077	1,951
Railroad terminal companies	.....	185
Industrial uses	28	339
Schools (public and private)	13,228	26,685
	14,565	29,636
	40,096	57,871

N. C.—Not classified.

A large advance in the number of buses engaged in sightseeing and touring service is shown. The number now reaches a total of 1,981 as compared with 1,077 last year. It is particularly difficult to obtain information about this class of operation, inasmuch as it is generally unregulated. The estimate of 2,500 which has been made under this heading is regarded as particularly conservative.

Three hundred and thirty-three hotels operate 539 buses over 934 miles of route. This would indicate that operation in this field has more than doubled since a similar survey was made for 1924. This showed 182 hotels running 237 buses.

The geographical division of bus operation is shown in the following table:

STATE— New England Dist.:	No. of Cos.	Total Vehicles	Street Car Type	Sedan and Parlor Car Type	Touring Cars	Miles of Route	Total Non-Common Carrier Buses No. of Cos.	No. of Buses	Miles of Route
1 Connecticut	78	483	365	64	37	2,202.8	58	421	3,769
2 Maine	87	215	101	29	85	3,101.0	102	161	1,648
3 Massachusetts	194	1,025	798	227	...	4,926.1	194	832	9,544
4 New Hampshire	59	118	76	37	5	1,374.0	214	517	6,472
5 Rhode Island	37	175	82	48	12	597.5	7	11	65
6 Vermont	48	110	90	6	14	1,372.0	61	43	348
Total	503	2,126	1,512	411	153	13,573.4	636	1,985	22,046
North of the Ohio and East of the Mississippi:									
7 Delaware	6	65	65	...	...	121.0	37	70	1,193
8 District of Columbia	6	156	116	40	...	95.0	14	109	790
9 Illinois	106	1,384	1,085	273	25	2,456.0	749	1,905	27,995
10 Indiana	173	846	582	236	28	6,324.0	856	1,050	13,320
11 Maryland	155	360	271	76	13	3,015.0	101	276	3,251
12 Michigan	168	1,805	1,024	281	500	7,140.0	273	356	3,842
13 New Jersey	121	2,108	1,638	136	334	3,280.0	129	297	2,398
14 New York—(outside New York City)	469	1,782	1,654	86	42	10,977.0	{ 569	915	10,605
New York City only	310	890	871	19	...	510.0	{ 36	379	.....
15 Ohio	455	1,649	1,099	387	163	11,372.0	1,039	2,454	9,654
16 Pennsylvania	575	2,186	1,859	202	125	9,384.0	464	429	5,071
17 Wisconsin	65	457	210	222	25	4,052.6	91	363	3,737
Total	2,609	13,688	10,474	1,958	1,255	58,726.6	4,358	8,602	81,850
Southeastern States:									
18 Alabama	67	163	4	89	67	1,531.0	459	615	5,906
19 Arkansas	72	292	75	126	91	4,499.0	171	86	368
20 Florida	76	518	94	412	12	3,788.0	264	680	6,091
21 Georgia	96	255	172	12	70	5,160.0	246	460	5,724
22 Kentucky	302	551	44	205	300	4,329.0	1,225	569	7,202
23 Louisiana	49	546	307	239	...	3,489.0	115	127	1,531
24 Mississippi	28	85	60	3	22	1,731.0	864	1,984	25,468
25 North Carolina	197	528	62	235	230	6,911.0	800	1,918	40,130
26 South Carolina	30	153	18	10	125	2,117.0	347	320	4,005
27 Tennessee	164	412	155	130	125	5,025.0	668	308	3,889
28 Virginia	185	565	437	11	117	4,956.0	366	808	11,975
29 West Virginia	87	268	70	156	42	2,160.0	114	588	7,644
Total	1,353	4,336	1,499	1,628	1,201	45,696.0	5,655	8,497	119,932
Northwestern States:									
30 Idaho	65	186	32	61	93	3,839.0	16	384	4,953
31 Iowa	56	166	111	36	19	2,779.0	399	1,155	13,617
32 Minnesota	77	552	164	386	2	4,942.3	360	380	4,551
33 Missouri	192	794	594	66	34	11,899.0	246	713	8,827
34 Montana	29	121	23	22	76	3,700.0	93	222	672
35 Nebraska	52	166	86	64	16	2,119.0	99	187	1,404
36 North Dakota	31	70	25	19	28	2,400.0	509	1,008	13,104
37 South Dakota	30	90	44	29	17	3,048.0	78	115	1,495
38 Wyoming	30	58	22	30	6	1,350.0	72	495	4,290
Total	562	2,103	1,099	713	291	36,076.3	1,872	4,609	52,914
Southwestern States:									
39 Arizona	72	185	55	112	18	4,058.0	27	384	4,465
40 Colorado	56	184	20	122	42	3,986.0	159	632	5,527
41 Kansas	111	334	182	53	99	4,641.0	173	362	4,643
42 Nevada	63	151	11	25	115	4,500.0	33	24	312
43 New Mexico	23	116	11	44	61	924.0	227	192	2,496
44 Oklahoma	156	299	92	57	150	12,090.0	409	932	7,384
45 Texas	167	828	389	177	262	11,126.3	877	432	5,533
46 Utah	65	304	75	175	54	3,059.0	107	156	1,933
Total	713	2,401	835	765	801	44,294.3	2,012	3,114	32,293
Pacific Coast States—									
47 California	458	2,253	459	1,357	437	20,805.0	200	1,764	19,593
48 Oregon	98	571	119	416	36	5,369.0	99	127	1,202
49 Washington	159	667	163	375	126	7,800.0	345	907	4,570
Total	715	3,491	741	2,140	599	33,974.0	644	2,798	25,365
Total U. S.	6,455	28,145	16,158	7,623	4,300	232,340.6	15,177	29,605	334,401

Spring Meeting of Eastern Refiners

Sessions of National Petroleum Association at Cambridge Springs, Pa., Discuss the Problems of Manufacturing

By George Turnbull

CAMBRIDGE SPRINGS, Pa., Apr. 17. The National Petroleum Association closed its semiannual meeting here after having discussed many matters of vital interest to the refiners in the eastern territory, including traffic, the gasoline situation and refinery capacity, steam and boiler house problems, uniform accounting, fire marshals, credit matters and testing methods. More than 70 members, most of them from the western Pennsylvania territory, were in attendance.

The Tulsa gasoline price is reflected in other markets and is the most typical in the country, J. E. Pogue told the meeting. A good index of supply and demand is represented by stocks, he said, showing if the seasonal and growth elements were eliminated a more significant figure would be arrived at. In connection with the growth situation in arriving at the stock figure it was necessary to make one assumption, that during the period from 1918 to 1921 the relationship of stocks to demand was more nearly in balance than since and this period was used in arriving at the element of growth. A chart showed quite a striking coincidence between the stock line and the price line. In 1920 the price got up to 23 cents and stocks were only 70 per cent of normal. In 1922 cracking came in in a big degree and stocks went up to 130 per cent and the price dropped to 10¾ cents. From the middle of 1922 until the present stocks have been larger than they should have been, he said. The speaker showed how in 1923, 1924 and 1925 stocks relatively piled up in the summer time, and last spring while stocks were actually piling up they relatively fell to 110 per cent of normal, and then the refineries got busy and stocks relatively went up to 152 per cent. The price at this time, he stated, dropped only to 9 cents for the reason that the situation in the Mid-Continent was better and the crude situation improved.

CONVENTION ADDRESSES

The addresses of the following speakers presented at the spring meeting of the National Petroleum Association held April 15 and 16 will be found elsewhere in this issue:

	Page
H. S. Bell	31
H. A. Ross	134
Charles L. Parmelee	138
P. S. Tarbox	160

The conclusions drawn from this study were that the price of gasoline is controlled by the statistical position of gasoline as is shown by stocks. In its broad movements gasoline has a free market; stocks have been large since 1922 and prices low; low prices have been due to overproduction; the price of gasoline is governed by the overall situation in the United States.

He said the gasoline situation at the end of February showed a considerable improvement over September or October. "At the end of February, however, stocks were 15 per cent above normal," he said, "and still too large. If there should be a 15 per cent increase in the gasoline demand in March, April, May and June and no increase in production normal could be reached and a good gasoline market prevail. I have no illusions that the refiners will hold down their production. It is easy for the refiners to hold down when the prices are low, but it is another matter when an upward movement starts."

Traffic Developments

One of the most active of the various departments of the National Petroleum association is that dealing with traffic matters, and the majority of Thursday morning's session was devoted to this after the opening remarks by O. P. Keeney, the president. The principal address was given by Willis Crane, traffic attorney of the association, and dealt with the work of the traffic department at Washington, the various traffic groups and the rate situations requiring discussion and action.

Mr. Crane reported employing H. E. Elkins to give practically his entire time to traffic problems. Mr. Crane praised the cooperation among the members, especially the traffic managers. "The organization of the traffic department with the various groups is now completed," he said. "There are splendid groups at Oil City, Warren and Bradford."

Mr. Crane told of many complaints adjusted satisfactorily and stated he could not say any case had been definitely lost; although there had been some adverse decisions, he would consider them merely as temporarily adverse. The most important thing now is the question of rates generally in eastern territory, and there must be a general readjustment. The industry would move more freight if the rates were more equitable. There are no export rates from western Pennsylvania, making it necessary for the refiners in this district to pay a high rate to the coast, with the result the export movement is negligible. "The difficulty is to educate the railroads to the fact that the interests of the railroads and the refiners on this matter are identical," he said. "Our job is to point out instances where there will be more traffic on lower rates." He told of meetings with the railroads and the submission of one proposition for a special rate on oils not entirely refined, a reduction of about 75 per cent, and of another proposition for barreling in transit at Atlantic seaboard points.

During the meetings of the traffic departments, arrangements were completed for the establishing of a subcommittee of a traffic group in West Virginia.

At the Thursday afternoon session an address on "The Modern Trade Association in Action" was made by Nathan B. Williams, counsel of the National Association of Manufacturers, and the remainder of the afternoon devoted to accounting methods and problems.

W. W. Mattison, of the American Petroleum Institute, spoke on "Uniform Accounting for the Oil Industry." Mr.

(Continued on Page 156)

REFINERS ATTENDING NATIONAL PETROLEUM ASSOCIATION MEETING AT CAMBRIDGE SPRINGS

CAMBRIDGE SPRINGS, Pa., Apr. 15.—Among those who registered at the meeting of the National Petroleum Association here today were the following: A. W. Scott, Empire Oil Works, Inc., Oil City, Pa.; F. G. Bannerat, Elk Refining Co. and United Refining Co., Pittsburgh, Pa.; Alfred A. Swart, Lakewood, N. Y.; Harry S. Peterson, Seneca Oil Works, Warren, Pa.; Harry Barnard, Union Draft Gear Co., Chicago, Ill.; B. H. Mathis, Warren Tank Car Co., Warren, Pa.; J. W. Bridge, Union Draft Gear Co., Chicago, Ill.; Col. E. V. D. Selden, Crystal Oil Works, Oil City, Pa.; J. T. Brasnahan, Emlenton Refining Co., Emlenton, Pa.; J. W. Fawcett, Crystal Oil Works, Oil City, Pa.; J. R. Sloane, James B. Berry's Sons Co., Oil City, Pa.; E. W. Smiley, Warren, Pa.; Howard Hanna, Valvoline Oil Co., Warren, Pa.; D. H. Culbertson, North Penn Refining Co., Warren, Pa.; C. L. Nolf, Continental Refining Co., Oil City, Pa.; W. V. Greer, Crew Levick Co., Warren, Pa.; Houston Dunn, National Petroleum Mutual Fire Insurance Co., Philadelphia, Pa.; Samuel Messer, James B. Berry's Sons Co., Oil City, Pa.; S. B. Browne, Great Western Oil Co., Cleveland, Ohio; B. W. Browne, Great Western Oil Co., Cleveland, Ohio; R. G. Browne, Great Western Oil Co., Cleveland, Ohio; Fayette B. Dow, Washington, D. C.; G. B. Hunter, Emlenton Refining Co., Emlenton, Pa.; C. D. Chamberlin, Cleveland, Ohio; O. P. Keeney, Tide Water Oil Co., New York; C. L. Suhr, Pennzoil Co., Oil City, Pa.; N. B. Williams, National Association of Manufacturers, Washington, D. C.; T. E. McLaughlin, Independent Refining Co., Oil City, Pa.; R. B. Stumpf, Waverly Oil Works, Pittsburgh, Pa.; D. E. Carrier, Pennzoil Co., Oil City, Pa.; H. A. Croft, joint car inspector, Oil City group; George Turnbull, Derrick and The Oil and Gas Journal, Oil City, Pa.; George Brockway, Seneca Oil Works, Warren, Pa.; P. S. Tarbox, Independent Refining Co., Oil City, Pa.; E. C. Gardner, Seneca Oil Works, Warren, Pa.; J. T. Mullaney, Canfield Oil Co., Cleveland, Ohio; E. E. Harrington, National Refining Co., Cleveland, Ohio; J. B. Northrop, Ohio Valley Refining Co., St. Marys, W. Va.; Myron Evans, Island Petroleum Co., Pittsburgh, Pa.; H. W. Maichl, Tiona Refining Co., Clarendon, Pa.; T. M. Moore, Tiona Refining Co., Clarendon, Pa.; W. H. Seltzer, Tri-State Refining Co., Kenova, W. Va.; C. D. Blaier, Levi Smith Refining Co., Clarendon, Pa.; G. H. Detlor, Warren Refining Co., Warren, Pa.; Paul Truesdell, National Petroleum News, Cleveland, Ohio; H. H. Fleming, Oil Conservation Engineering Co., Cleveland, Ohio; G. W. Ebert, James B. Berry's Sons Co., Oil City, Pa.; Tom Moore, Fred G. Clark Co., Cleveland, Ohio; Fred G. Clark, Fred G. Clark Co., Conewango Refining Co., Cleveland, Ohio; Earl E. Brown, Emery Manufacturing Co., Bradford, Pa.; B. E. Stroud, McKean County Refining Co., Bradford, Pa.; L. C. Jamieson, Viking Oil Co., Warren, Pa.; G. G. Brockway, Warr Penn Refining Co., Warren, Pa.; W. C. Platt, National Petroleum News, Cleveland, Ohio; R. J. Alexander, Pennsylvania Grade Crude Oil Association, Oil City, Pa.; R. W. Clark, Crown Central Petroleum Co., Warren, Pa.; Carl Peterson, Allegheny Petroleum Co., Warren, Pa.; H. C. Hedges, Union Oil Co. of Pennsylvania, Warren, Pa.; E. M. Hyatt, Pure Oil Co., Warren, Pa.; A. V. Roebley, Pure Oil Co., Warren, Pa.; E. M. Lyons, Tiona Refining Co., Clarendon, Pa.; H. J. Pugsley, Goulds Pumps, Inc., Pittsburgh, Pa.; H. S. Bell, New York; R. A. Browne, Pennzoil Co., Oil City, Pa.; James Lewis, Bradford Oil Refining Co., Bradford, Pa.; C. L. Von Tacky, Titusville Oil Works, Titusville, Pa.; C. R. Kerr, Sloan & Zook Co., Bradford, Pa.; Joseph E. Pogue, New York, N. Y.; S. B. Browne, Great Western Oil Co., Cleveland, Ohio; C. R. Linquist, Asiatic Petroleum Co., New York, N. Y.; D. L. Evans, Sloan & Zook Co., Bradford, Pa.; K. M. Lyons, Inland Petroleum Co., Warren, Pa.; Frank Philippbar, Kendall Refining Co., Bradford, Pa.; Otto Koch, Kendall Refining Co., Bradford, Pa.; Alfred Mullhaupt, Jr., Kendall Refining Co., Bradford, Pa.; I. H. Shearer, Kendall Refining Co., Bradford, Pa.; H. H. Greene, Kendall Refining Co., Bradford, Pa.; Herbert G. Eaton, Superior Oil Works, Warren, Pa.; James D. Berry, Frank Berry, Charles Berry, James B. Berry's Sons Co., Oil City, Pa.; E. S. Moorhead, Sun Oil Co., Pittsburgh, Pa.; H. A. Ross, New York, N. Y.; E. H. Beshem, Levi Smith Refining Co., Warren, Pa.; Charles McLean, H. M. Carruth, Canfield Oil Co., Cleveland, Ohio; Frank M. Smith, Valvoline Oil Co., Warren, Pa.; W. K. Allen, H. W. Schmidt, United Refining Co., Warren, Pa.

Preventing Steam Losses at Refineries

Insulation, Stopping Small Leaks, and Utilization of Exhaust Steam Results is Large Saving to Plant Operators

By H. S. Bell*
Consulting Engineer, New York

No matter how efficient a refiner's boiler house may be, he must use the steam intelligently and without waste if he is to reap the full benefits. This paper will direct attention to the wastes that are often encountered in the steam distribution system and offer suggestions for conserving steam in the refinery.

In order to evaluate the losses and possible savings that follow, I have drawn upon the statistics now available from analyses of member companies' boiler houses. Taking conditions as they were found in 10 different boiler houses, fuel costs average 36 cents per 1,000 pounds of steam. It is believed that this figure is fairly representative of member companies' plants.

To this must be added labor, maintenance supplies, depreciation and a percentage of general overhead. It is safe to say that these items will average 50 per cent of the fuel for the typical small refinery. This would bring the cost of steam to 54 cents per 1,000 pounds, a figure which is used in the following discussion.

Certain losses are apparent to all but do we appreciate the amount of money involved?

Question of Insulation

Take the question of insulation: one lineal foot of bare pipe on a line conducting steam at 100 pounds gauge pressure will dissipate to the atmosphere the following heat units per hour, when the temperature is 60 degrees Fahrenheit:

1 in.	301 B.T.U.
2 in.	543 B.T.U.
3 in.	799 B.T.U.
4 in.	1,027 B.T.U.

For the average condition encountered, 1 pound of steam generated at 100 pounds with feed water at 150 degrees contains 1,070 B.T.U. so the loss of steam per hour by the one foot of exposed pipe is as follows:

1 in.	.28 pound
2 in.	.51 pound
3 in.	.75 pound
4 in.	.96 pound

These figures do not appear very startling but let us put them in terms of steam and money lost in one year:

	Steam Lost	Value
1 in.	2,440 pounds	$1.32
2 in.	4,470 pounds	$2.41
3 in.	6,580 pounds	$3.55
4 in.	8,400 pounds	$4.54

We all acknowledge the value of insulation on live steam mains, but it is often thought that it is not worth while to insulate the exhaust steam lines. Let us analyze this question a bit. Heat losses are in approximately direct proportion to the difference in temperature between the hot and cool surfaces of the pipe. In the above examples, this difference amounted to 278 degrees. For 5 pounds exhaust steam the difference is 168 degrees, so that for all practical purposes the losses are 60 per cent of those deducted for the live steam mains.

Remembering that these figures are for only one lineal foot of pipe and considering the nominal cost of covering, can any refiner afford to leave any of his lines or fittings exposed? Reference to a standard price list for covering of 90 per cent efficiency reveals an average return of 472 per cent on $1 spent for work of this kind on the four pipe sizes in the above examples. Therefore, the cost is earned in about two and one-half months.

Little Leaks Overlooked

As we go around the refinery, we repeatedly see steam leaks. A very bad one receives attention, but the little ones are often overlooked in the belief that the loss is nominal and we can take care of it some time next week. Don't forget that the majority of leaks become greater and that even the small ones represent quite a loss in money.

For instance, the steam lost per hour from small leaks in a system operating at 100 pounds is as follows:

1/32 in.	4.4 pounds
1/16 in.	17.7 pounds
1/8 in.	70.1 pounds

Not much loss we say, but apply our cost of steam over a year and the figures in dollars are:

1/32 in.	$ 20.63
1/16 in.	$ 82.60
1/8 in.	$327.40

These figures should spur every refiner so to educate his men that a steam leak receives immediate attention. While on the subject of leaks, the question of open drips brings itself to mind. They represent a prolfic source of leaks. Remedy, efficient traps. Even the best traps will leak at times and that they may be detected, never run the discharge to blind drains or sewers. Let them discharge into catch basins or other receptacles where the discharge pipe is visible. Otherwise, how can we tell when some trap develops a leak of considerable financial importance?

Steam for Power

The topics discussed so far have had to do with installation and maintenance of the steam distribution system. The next question to discuss is the way the steam is used for power and for process work. The proportion of boiler load going into the production of power in a refinery is relatively small when compared to most other manufacturing plants. The big use of steam is at the stills. Here is a real chance for educational work among the operators.

Steam has three functions when introduced into a still of oil: first, it lowers the vapor tension according to the laws of partial pressures, thus reducing the necessary temperatures in the still; second, it agitates the oil in the still, thus preventing local overheating on the bottom of same; third, it has a beneficial effect upon certain distillates.

Considering the difference in equipment in various plants, it is, of course, difficult to set up a standard for the minimum amount of steam necessary. For the average plant, I believe an amount equivalent to one pound per gallon of distillate when first applied up to 7 pounds when finishing stock, is sufficient.

These figures amount to a total of 140 pounds per barrel charged on a crude still run. Suppose for example that 15 per cent more steam was used than absolutely necessary. A refinery running 30,000 bbls. per month would waste 21,000 pounds of steam on the crude stills alone. Without making detailed calculations, it is safe to say that a like amount would be lost on rerunning and reducing operations, or a total of 42,000 pounds per day. This quantity of steam wasted at our previous figures, amounts to $8,300 per year.

We all know that the average stillman will "give her all she'll take." Furthermore, his measure of the steam is "a quarter turn" or "one spoke" of the valve. Such measurements are crude in the extreme. It is time to get down to facts.

Minimum Quantity

To set up the minimum quantity of steam for a given plant with due regard to quality, requires some careful testing. Assuming present conditions satisfactory, establish carefully how much steam is being used. The easiest way is to bypass the water traps in the running lines and let distillate and water flow together through the lookbox. Catch a sample in a 500 or 1,000 c.c. graduate and measure the water.

Then reduce the amount of steam 10 or 15 per cent and have the laboratory take samples of distillates and stock and see that the odor, color, etc., are not impaired. If satisfactory, make a further reduction. A point will be found beyond which it will be unsafe to go. Thus a standard is established for the conditions encountered.

Once established, how can this standard be maintained? If left to the turn of a valve, conditions will soon revert to the original. A small indicating flow meter inserted in the steam line leading to each individual still is recommended. A complicated recording device is not wanted, but there are on the market simple indicating meters that can be installed at very nominal cost. When installed, check them occasionally by measuring the water in the stream.

Use With Steam Stills

While on the subject of stills, the question of steam stills deserves attention. I am not an advocate of steam stills, holding that modern equipment using direct fire will accomplish the results more economically. Nevertheless, they are a recognized piece of equipment and if we run them, we should do so intelligently.

It is surprising to see how many refiners depend entirely upon open steam sprays in the still. The use of closed coils properly trapped is strongly recommended. Depend upon the closed coil to supply the heat and use only enough open steam to lower the vapor tension and help sweeten the oil. Then all of the latent heat of the steam from the coils is turned into useful work. With open sprays alone, particularly at the end of the run, a large proportion of the steam "blows through" and goes to the condenser with the distillate. The heat given up by a pound of steam passing through the oil is only 3 to 4 per cent of the heat given, if the same pound of steam is condensed. Furthermore, the load on the condensers is increased, resulting in the necessity of more water circulated.

Saving of Exhaust Steam

After the stills, the next place where quantities of steam are used is in engines, pumps and compressors. These prime movers return approximately an equal number of pounds of exhaust steam. I wonder if it is thoroughly understood how much heat there is in this exhaust. Neglecting moisture, one pound of exhaust steam contains 96 per cent as many heat units as does one pound of live steam at 100 pounds gauge pressure. Are we any more justified in wasting this heat than we are that contained in live steam?

If no other means are available, a portion of this exhaust steam should be used to preheat boiler feed water, and a refinery with feed water under 210 degrees should take steps to see what is the matter. The balance of the exhaust should be utilized for heating buildings, hot tanks, etc., and not a pound should be allowed to escape.

I presume some of you are thinking this idea may be all right, but we tried it on such and such, and had to go back to live steam. If so, let us ask the question: "Was the failure due to the exhaust steam or due to the equipment in which we tried to use it?" To convey exhaust steam requires larger pipe than for live steam; also for a given amount of radiation slightly more surface is needed. Then allowance must be made for fluctuations in the quantity of exhaust steam available. The solution is to modify the mains and coils and then install a pressure regulating valve in a by-pass between the live and exhaust steam systems.

Exhaust Steam With Stills

Let us carry the use of exhaust steam a step further. Why not use it in the stills? The problem is simply to get enough volume into the still to accomplish our purpose. The pressure back of the control valve rarely exceeds, or at least should not exceed, 5 or 6 pounds. Why carry, 60, 70 or 100 pounds on the main? Again, it is a question of coil and header design only. Five plants coming under my direct observation are operating their stills on exhaust steam and have been doing so for various periods up to nine years. Several other large modern plants are reported to be so operating.

(Continued on Page 156)

MODEL SYSTEM FOR DISTRIBUTION AND THE USE OF STEAM AT REFINERY

There will be two main steam distribution headers through the yard. One will be under full boiler pressure and will feed all prime movers, such as turbines, engines, steam pumps, etc. The other system will collect all of the exhaust steam from the prime movers at 15 to 20 pounds pressure. This exhaust will be conveyed to a central point where waste heat is available to bring it up to 450 to 500 degrees in temperature and will then distribute it to stills, heating coils, refrigerating machinery, etc. Between the two systems will be a positive acting automatic regulator so that the low pressure mains are maintained at constant pressure.

All conveniently located drips will be returned to the boilers. Any pumps or mechanical equipment far distant from the source of live steam will be electric driven. Electricity will be furnished by turbine driven generators. No particular effort to obtain low water ratings is necessary. Low first cost and reliability are the two first considerations in the choice of prime movers of all kinds for this service.

Thus all the power becomes in reality a by-product of the steam necessary in any case for process work. The only charges against the power costs are supervision maintenance, depreciation and 7 to 10 per cent of the heat in the steam used. Where this system has been installed, costs for electricity as low as ½ cent per K.W. hour with coal at $5 per ton have been reported. No central station can compete on this basis.

The above is, of course, an ideal system and cannot be adopted in full at one time by the average refiner. It should be held up as the ultimate goal, and all changes and new installations should be laid out with the idea of gradually developing to the point where all of the economies may be realized.

*Before National Petroleum Association meeting, Cambridge Springs, Pa., April 15.

Arkansas-Louisiana Refining Area

Manufacture of Fuel Oil An Outstanding Feature of This Section With Yield Averaging About 70 Per Cent

By Charles E. Bowles
Petroleum Analyst, The Oil and Gas Journal

Of the three refining areas that correspond with the Mid-Continent producing area — Oklahoma-Kansas, inland Texas and Arkansas-North Louisiana — each is radically different from the others.

The Oklahoma-Kansas area is outstandingly a producer of gasoline — Inland Texas produces less gasoline and more fuel oil — Arkansas-North Louisiana is outstandingly a producer of fuel oil.

In the Oklahoma-Kansas area "the average barrel" of crude run to stills is today yielding about 50 per cent gasoline. In the Arkansas-North Louisiana area the average barrel is yielding about 70 per cent fuel oil.

As of January 1, 1926, (United States Bureau of Mines report) there were 28 refineries in the Arkansas-North Louisiana area—17 were operating and 11 were shut down. The rated capacity of the 17 operating plants was 64,220 bbls. a day—and of the 11 shut-down plants 11,450 bbls. a day.

Runs to Stills

In 1925 the refineries in this area ran a little over 16,000,000 bbls. of crude to stills—or an average of about 44,000 bbls. a day. It is therefore obvious that regardless of the 11 shut-down plants, the 17 operating plants had, on the average, almost 50 per cent more charging capacity than they used during the year.

The Arkansas-North Louisiana area is essentially a producer and not a refiner of crude oil—and this was true even before the bringing in of the El Dorado Field in January, 1921, as shown by the following tabulation:

Year—	Crude Produced	Crude Run to Stills
1918	13,306,000	1,158,000
1919	14,879,000	1,614,000
1920	33,767,000	3,580,000

It is thus seen that prior to the bringing in of the Arkansas fields the refineries in northern Louisiana were running to stills only about 10 per cent of the oil produced in that area.

In the five years since Arkansas became a producer the output of crude oil and the refinery runs in Arkansas and north Louisiana have been as follows:

Year—	Crude Produced	Crude Run to Stills
1921	35,646,000	6,012,000
1922	46,341,000	7,689,000
1923	59,079,000	8,735,000
1924	64,665,000	12,663,000
1925	91,653,000	16,239,000
Total	297,384,000	51,328,000

Refined 17 Per Cent of Production

It is thus seen that over the above five-year period this area has refined only about 17 per cent of the crude that it produced. Of the remaining 83 per cent part has gone into storage and the remainder has been shipped out of the area—to storage, to refineries and to be consumed as crude.

In 1925 this area produced 91,653,000 bbls. of crude—or a daily average of about 251,000 bbls. Its refineries run 16,239,000 bbls. of crude—or a daily average of 44,000 bbls. This left a daily average, throughout the year, of 207,000 bbls. of crude oil to be either stored in this area or shipped out of it.

It is obvious that the general conclusion of the industry as to this area is that the best solution of the problem is to do a relatively small amount of refining in this area and ship the great bulk of the crude out of it.

It is most interesting to compare the two graphs of the Oklahoma-Kansas area (The Oil and Gas Journal, March 4, Pages 82 and 88) with the accompanying graphs, especially as to the basic trend of refining operations as reflected by the output of gasoline and fuel oil.

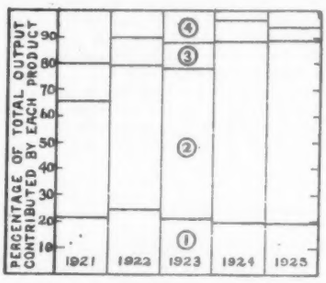
In the Oklahoma-Kansas area during 1918-19-20 the average barrel of crude produced more fuel oil than gasoline—in 1921 (the "transition" year) the output of the two products was equal—from 1922 to date the average barrel of crude has yielded increasingly more gasoline and less fuel oil.

On the other hand, in the Arkansas-North Louisiana area, during the last four years, the average barrel has been producing less gasoline and more fuel oil.

Much Low Gravity Crude

Of course the answer to this exception to the general tendency of the entire country (more gasoline and less fuel oil) is found in the tremendous output of heavy oil from the Smackover Field.

As the rated capacity of the operating refineries in this area last year was approximately 64,000 bbls. a day and the average crude runs 44,000 bbls. the 50 per cent "surplus," or unused refining capacity that was idle during the year would indicate that, on the whole, the refiners chose to run their plants during the year at an average of about two-thirds capacity, refine 16,000,000 bbls.—leaving 75,000,000 bbls. to be stored and shipped.



Arkansas-North Louisiana refining area. Percentage recovery of four major products based on crude run to stills. Space 1, gasoline recovery; space 2, fuel oil recovery; space 3, kerosene, including the small recovery of lubricating oil; space 4, all other products. Based on data of the United States Bureau of Mines.

In the matter of storage of gasoline and fuel oil the Arkansas-North Louisiana area occupies a most unique position among the 10 refining areas in the United States. Except for February and April, 1921, there has not been a month during the last five years when the gasoline in storage in this area was equal to the month's production. And during a great deal of this time the gasoline in storage on the last day of the month was equal to only 5, 10 or 15 days' output. This is clearly shown in the accompanying graph by comparing Line 2 (gasoline made) with Line 4 (gasoline in storage).

Fuel Oil in Storage

And, except for the month of February, 1923, there has not been a month since the spring of 1922 when the fuel oil in storage was equal to the month's production. And, up to the middle of 1925, the fuel oil in storage at the end of the month was equal to from 5 to 15 days' output. However, the space between fuel oil production and fuel oil in storage has been narrowing down since the summer of 1925—and at the close of February, 1926, the storage line came closer to the output line than it has for four years.

On the other hand crude oil in storage, steel and earthen, has increased until today it stands at approximately 32,000,000 bbls. in Arkansas and over 15,000,000 bbls. in northern Louisiana—a grand total of over 47,000,000 bbls.

Taken as a whole, the refineries of this area are well equipped with cracking units although a casual glance at the relative recoveries of gasoline and fuel oil, as shown by the small graph, would not lead one to that conclusion. However, when one takes into consideration the fact that a great deal of the Smackover heavy crude contains practically no gasoline—that today Smackover heavy oil constitutes 60 per cent of the total output of this area—and that prior to the development of oil in Arkansas the refineries in north Louisiana were recovering over 25 per cent gasoline, and practically all by straight run distillation—some conclusion can be drawn as to what the recovery of gasoline would be today in this area if it had no cracking units.

Cracking Installations

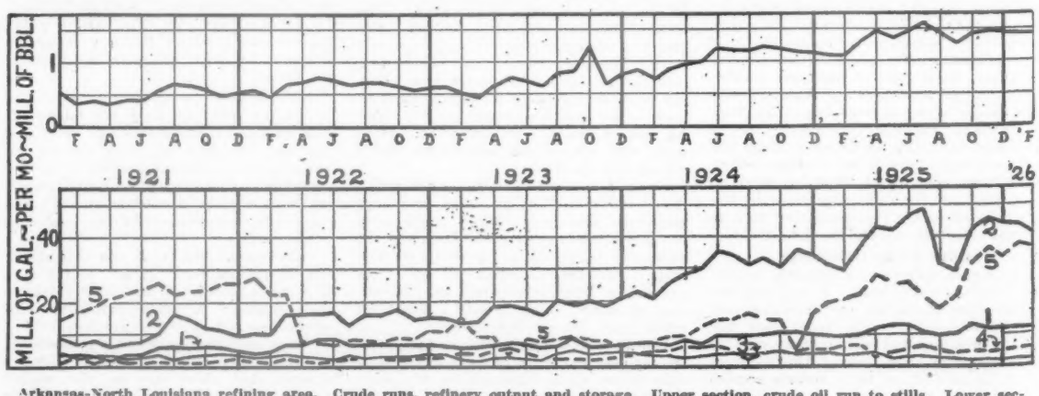
Of the five shut-down plants in Arkansas and the six in north Louisiana with a combined capacity of over 11,000 bbls. a day, not a plant is equipped with a cracking unit.

Of the 17 operating plants in this area, with a combined capacity of over 64,000 bbls. a day, 11 with a combined capacity of 52,700 bbls. a day are equipped with cracking units.

At the present time this area is producing about 84,000 bbls. a day of light oil and 134,000 bbls. of heavy oil—a total of about 218,000 bbls. a day.

The refining situation can therefore be summed up by saying that the 17 operating refineries with over 64,000 bbls. daily capacity, and well equipped with cracking units, have over 200,000 bbls. a day of local crude production "to pick from"—and that this crude ranges all the way from "gasolineless" Smackover to oil that contains naturally over 25 per cent gasoline. As the average recovery of gasoline in this area last year was less than 20 per cent, and as the proportion of low gravity crude run to stills was large even though there was more than enough light oil available to run all of the plants at their full capacity all of the time, one gets an interesting sidelight on the present status of cracking in this area.

If Arkansas crude had been of about the same quality as Oklahoma crude—and had a large part of its 1925 production been run to stills—the situation in not only this area but in the United States would have been extremely crucial. As it was Arkansas produced 381,000 bbls. of crude a day in May, 1925, with practically no effect on the price structure.



Arkansas-North Louisiana refining area. Crude runs, refinery output and storage. Upper section, crude oil run to stills. Lower section, line 1, gasoline made; line 2, fuel oil made; line 3, kerosene made; line 4, gasoline in storage at refineries; line 5, fuel oil in storage at refineries. Based on reports of the United States Bureau of Mines.

TOOTHLIKE FOSSILS AND ORIGIN OF OIL

By Charles E. Kern
Washington Bureau
The Oil and Gas Journal

WASHINGTON, D. C., Apr. 17.—Dr. E. O. Ulrich of the Geological Survey, and Dr. R. S. Bassler of the National Museum, are joint authors on a paper on the microscopic toothlike fossils called conodonts, which tends to prove that petroleum has been formed from vast beds of fish that lived back in the Paleozoic Age.

The Smithsonian Institute of which the National Museum is a part has issued a bulletin referring to this interesting discovery in the following language:

"The conodonts occur in oil-bearing shales of the Paleozoic strata where other recognizable fossils are rare or absent. They occur by billions in the rocks but always as individual teeth, so that it has been impossible to determine the type of animal to which these teeth belong. However, since the same species show rights and lefts, indicating that they were set into jaws and since the teeth of certain small recent fishes, related to sharks, somewhat resemble them, it is probable that the conodonts are all that remain of minute primitive fishes which swarmed in the Paleozoic seas.

"The flesh of these Paleozoic fishes undoubtedly contributed much toward the formation of petroleum and the teeth themselves now enable the geologist to determine the age of the strata from which he can work out the rock structure and then, in turn, the position of the oil pools."

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Cowen Oil & Refining Company	Los Angeles, Cal.	2
Central Oil Company	Los Angeles, Cal.	1
Dixie Oil Co. (Standard of Indiana)	Chicago, Illinois	2
Daugherty Company, Inc. H. K.	Bradford, Pa.	1
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Hurley Gasoline Company	Tulsa, Oklahoma	2
Lewis Oil Company	Pittsburgh, Pa.	1
Manhattan Oil Company	Kansas City, Mo.	1
Natural Gas & Fuel Company	Eldorado, Ark.	1
Oklahoma-Eastern Oil Co. (Devonian)	Tulsa, Oklahoma	2
Ohio Oil Company	Shreveport, La.	2
Oklahoma Gasoline Plants, Inc.	Oklahoma City, Okla.	1
Powers, M. F.	Tulsa, Oklahoma	2
Pure Oil Company	Columbus, Ohio	1
Phillips Petroleum Company	Bartlesville, Okla.	2
Phillips Company, Waite	Tulsa, Oklahoma	1
Palmer Corporation	Shreveport, La.	1
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Sloan & Zook Company	Bradford, Pa.	1
Sinclair Oil & Gas Company	Tulsa, Oklahoma	1
Saint Helens Petroleum Company	Los Angeles, Cal.	4
Texas Company, The	Tulsa, Oklahoma	1
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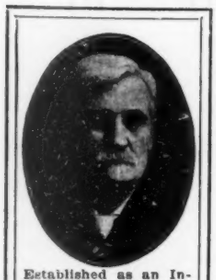

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GASOLINE SPECIFICATIONS

Despite all the conversation about conservation and cheaper gasoline little or no attention was given to the fact that over 300,000,000 gallons might be added to the motor fuel supply of the public by a mere adjustment of the specifications, until Doctor Francis emphasized it.

The public is chiefly interested in getting a supply of suitable motor fuel as cheaply as it can. Of course it wants it to be suitable and specifications are formulated to furnish assurance on that point. But, if by revising the specifications it can still have a suitable gasoline and get the advantage of having 10 days' additional supply, it is certainly entitled to that benefit.

If the oil industry, at the same time, and by the same means, can add that much gasoline to its output, instead of losing it, it is entitled to do so.

The interests of both the public and the industry coincide on this point and the much talked of policy of conservation can be given a practical demonstration to the extent of over a third of a billion gallons of gasoline a year.

Some may say we have too much gasoline now, with stocks approaching the two billion mark, but that is no reason for throwing half of it away. Nor is there any good reason why the refining industry and the public users of motor fuel should sacrifice 300,000,000 gallons a year to conform to Federal specifications that can be replaced by specifications that will give the public just as suitable gasoline and that much more of it.

The inquiry is heard, of course, how can this be done, and the answer to be suggested is simple enough.

Let the oil industry, through, say the American Petroleum Institute, get together and formulate its own specifications of suitable gasoline for popular consumption.

The public need have no fear that specifications so formulated would mean less suitable motor fuel because the oil industry could not afford for its own sake to announce specifications that would not guarantee a satisfactory product to the consumer. There are too many agencies qualified to pass judgment on such specifications to permit a lowered standard even if there was any disposition to offer it, which, of course, there is not.

The motoring public also is now sufficiently familiar with gasoline to judge from experience whether it is good or bad for automotive purposes.

As explained in Doctor Francis' article in The Oil and Gas Journal of April 8, many refiners are urging the cancellation of the end point specification, a position that has received the support of many experts, including the advisory board, representing the American Society for Testing Materials, Society of Automotive Engineers, National Petroleum Association, Western Petroleum Refiners Association, National Petroleum Marketers Association, American Society of Mechanical Engineers, American Railway Association and the American Petroleum Institute.

At one time gasoline was judged by gravity but the specifications no longer include that. Color also was once supposed to have special significance but it has been found necessary to revise specifications to conform to new discoveries.

Now the consensus of industry opinion is that the end point specification has also become unnecessary.

If that is the judgment of the industry there is no sufficient reason why it should continue to lose a third of a billion gallons of gasoline a year by adhering to the end point specification or why the public should be obliged to pay in refining costs for that much gasoline it does not get.

The fact is that modern refining equipment and practices have really gone further than the specifications, which are actually a handicap on production without any corresponding benefit to the consumer.

The result is that the refining industry is losing the benefit that it should gain from its own efficiency.

Primarily the motoring public and the automotive industry are most directly concerned because the refiners have to include in their overhead the failure to get the 300,000,000 and more gallons they are denied obtaining through present specifications.

The matter is important enough to demand the attention of all the industries affected. It should be a simple matter to have the leading technologists get together on specifications for suitable gasoline that would permit the utmost extraction.

Such specifications formulated under such auspices could be offered with the authority of the industry and put into practice would invite general acceptance.

After all, the industry itself should be the best qualified to solve its own problems. It has the technologists and the practical experience. It alone has the responsibility of satisfying its customers. It cannot afford to make an error of judgment which would instantly react against itself.

The Society of Automotive Engineers is calling for the establishment of a standard system of grading lubricating oils. The oil burner manufacturers are asking for a standardization of burning oils. Each is looking to the oil industry to lead in the framing of specifications.

In this connection there is immediate need for definite research work governing the qualities of motor fuel in regard to antidetonation characteristics. There is a demand from both the consumer and the refining industry and action should not be delayed for someone outside the oil industry to take the initiative. It is peculiarly and primarily the oil industry's business to announce such specifications for its product, a standard test for anti-knock gasoline.

An example of what can be done was shown when the American Petroleum Institute established its gravity tables, which have been generally accepted.

A similar step towards formulating specifications for gasoline for general use would appear to be in order, specifications that would be abreast of modern equipment and processes and give the industry and the consumers alike the benefits of the increasing efficiency of the refining industry.

All old-time gas men are thoroughly familiar with the utility and tightness of Dresser Coupled Pipe Lines, and their experience substantiates the claim that for Natural Gas they are far superior to all other types. The use of Dresser Couplings means maximum efficiency in the maintenance and operation of trunk lines and distributing systems.

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Technical Questions Answered

By DR. C. K. FRANCIS, TECHNICAL EDITOR

Cracking Processes

Kindly give a list of the cracking processes now available which are suitable for handling topped crude. —H. S. C.

We cannot discuss the patented processes, but if you will supply your complete address we shall be pleased to furnish the names and addresses of the agents who are handling the major processes now on the market. They will be glad to explain all details.

Lubrication

What is meant by the wedge action of a lubricating oil?—B. R.

The term is involved in the theory, and practical application, of lubrication. A flat stone may be thrown on the surface of a pool of water so that it will skip along the surface. It does not sink because it pushes forward faster than it can thrust the water aside in sinking. A high-speed motor boat following the same law throws its bow well above the surface and a wedge-like wave may be observed beneath the bottom. The lubricating oil on a bearing behaves in the same manner. The faster the bearing moves, the higher the wave or wedge.

Corrosion

The ells between our manifold and coils in the condenser box do not stand up, one went out in a week. What causes this?—O. S.

Probably acid formed from chemicals in the oil or in the water. Remedies for this include treatment of the crude, placing alkaline material in the still, packing part of the towers with limestone, and using acid resisting metals. You may help the condition if you will use cast iron ells and cut down the quantity of steam introduced into the still.

Treating

What is meant by vapor phase treating?—W. O. C.

Partial or complete purification of the hot vapor or steam before passing through the condenser. One successful process uses a filter drum packed with fullers earth. The vapor line enters this and the treated liquid passes out to the condensing system.

Corrosion

Upon removing the oil gauge from my car, which had not been used for several days, I noticed several drops of rust on the inside of the plug and on the gauge blade. Can you explain this?—L. B. A.

When a motor cools, moisture may be condensed from the air and if the oil was low, this probably explains the presence of the rust. Of course, acid in the oil would aid in the formation of rust, but again moisture is necessary for the reaction even when acid is present. The presence of acid in a lubricating oil is quite unlikely under modern methods for refining.

Distillation

What is the difference between fractional and destructive distillation?—A. R. M.

The various products such as gasoline, kerosene, etc., are obtained from crude oil by direct heating and condensing the vapors. The products are separated, or cut into fractions according to gravity. The process is fractional distillation and if the fractions were poured together the resulting mixture would be identical with the charge. Destructive distillation may be defined by means of the cracking process. The charge may be gas oil, which by means of pressure and high temperature is converted into say gasoline, kerosene and a residue. If these were united they would not resemble the original material. It has been destroyed, hence destructive distillation.

Fullers Earth

Can the value of fullers earth be found by analysis?—J. T.

Not by chemical analysis. Fullers earth is used for decolorizing and this power should be determined by comparison with a sample of known value. The test may be made with 100 to 1,000 c. c. of the earth in a small laboratory filter, and the oil run through, either to a definite color or until the earth is exhausted, as indicated by no change in the color of the oil used. The quality of oil obtained from the unknown earth, when compared with the volume obtained from the known earth, indicates the value of the sample.

Absorption Gasoline

What is the influence of temperature when absorbing gasoline from gas?—B. C. N.

At a constant pressure the quantity of gasoline absorbed varies with temperature. Decreasing as the temperature is raised and increasing as it is lowered. The industry is abandoning the practice of going to very low temperatures, because a more stable product is obtained the nearer normal temperatures are approached.

Treating

Our kerosene made from blend of straight-run and cracking stock, sometimes, only about two or three times a month, treats to good color but gets yellow within a short time if placed in the sun. Can you explain this?—T. W. A.

No. You may improve conditions if you add more acid but the trouble may be due to the character of the stock from the pressure stills. Too high temperature or too much of the pressure kerosene in the blend. Give us more details.

Coal Distillation

What are the substances obtained when distilling coal?—D. M.

Coke, tar, benzol, ammonium, sulphate and gas are the chief raw products.

Heckmann Tower

What is a Heckmann tower?—J. D. K.

This is a fractionating tower of the bubbling type, originally used in the coal tar industry. The design and action is the same as the tower now used in gasoline plants and refineries.

Benzol

What is benzol blend?—V. E. S.

A mixture of benzol and gasoline, usually 30 to 50 per cent. Benzol is the foundation or starting point of a great series of substances, and as the principal source is coal tar, these substances are known as coal tar or benzol derivatives. From 1.3 to 3 per cent is obtained from coal when making coke. When pure it boils at 176 degrees Fahrenheit, however, the commercial article is not pure, so the final boiling point may go as high as 290 degrees Fahrenheit. It is valued for its anti-knock properties. Does not burn so quickly as gasoline, and consequently permits higher compression without knocking. The carbon from benzol is not as hard and close-grained as that formed from gasoline, so may be blown out of the motor easier.

Geophysical Instruments

Articles in The Oil and Gas Journal relating to recent developments in locating oil by means of instruments, do not explain the actual means. Give a description of their use.—G.H. C.

Although this question has no direct bearing on the manufacturing end of the oil business a brief description of the instruments will probably be of interest to refiners and natural gasoline manufacturers. The instruments, the seismograph and the torsion balance, are not oil finders. They are scientific instruments which serve in determining the nature and position of rocks beneath the surface. They have been used with success in locating salt domes.

The seismograph is an instrument designed to record an earthquake shock. The simplest form is a cup of molasses. The wave of molasses raised by the tremor registers itself by a stain on the side of the cup. The scientific instrument registers by means of delicate pointers tracing lines on smoked glass or prepared paper. The direction, violence and duration of the movement is indicated by the lines traced.

The torsion balance is an apparatus used for the measurement of various kinds of physical forces, such as electric and magnetic attraction. The instrument used in geological work is provided with a pendulum. The swing of which, indicates the density of the formations tested.

The two instruments may be used independently or to confirm each other. They cannot locate oil but simply serve in determining favorable structures.

The seismograph is used to measure the time a tremor may travel a given distance. Dynamite, or other explosive, is exploded in a drill hole, say a half mile away. The shock will reach the instrument slowly or rapidly depending on the nature of the material it may have to pass through. It will be retarded by some and aided by others; passing quickly through salt and slowly through granite. By spotting the instrument and setting off the explosive at different points a fair idea of the kind of material is thus obtained.

The torsion balance determines density or gravity. The swing of the pendulum is retarded by heavy bodies. Its swing is quite free over a body of salt, but would be brought to a standstill over a mass of iron. The attraction of different rocks would vary between these two extremes.

The method has been used with success in locating salt domes but may be perfected so as to serve as a valuable aid in locating structures in other formations.

A NEW DEPARTMENT

With this issue The Oil and Gas Journal starts an additional service for its technical readers.

C. K. Francis

The new department of "Technical Questions Answered" was created with the view of aiding those connected with the manufacturing branches in the solution of the problems of construction and operation. Many of these problems are discussed in the numerous articles which appear weekly. These discussions, however, are often too general to answer the particular questions with which the operators are confronted daily.

Refiners and natural gasoline manufacturers are asked to state their questions in as much detail as possible so as to assure a complete and satisfactory answer. Only the initials of the persons asking the questions will be published.

The questions will be answered by Dr. C. K. Francis, recently appointed technical editor. Doctor Francis has been connected with the technical branches of the industry for many years both as an instructor and technologist including executive work. The benefit of his varied experience is available to all readers who ask for it.

Technical readers are also invited to submit their own ideas regarding new developments with which they are familiar. The Oil and Gas Journal at all times welcomes the opportunity to serve as the medium through which new devices or methods as perfected by one operator may be disseminated to the entire industry.

This policy of cooperation is followed in many other industries with satisfactory results to all concerned. It is suggested that those which have developed something new in construction or operation write a description and mail to the technical department. When feasible these descriptions should be accompanied by photos or diagrams. These contributions will be published and credit given to the author.

ENLARGING LOUANN PLANT

EL DORADO, Ark., Apr. 19. — Improvements and additions are now under way which will increase the capacity of the Louann natural gasoline plant of the National Gas & Fuel Co. from 8,500 to 12,000 gallons of gasoline daily. The construction will be completed within 60 days. The same company also is building a 4,000-gallon plant at Norphlet, Ark.

NEW UNITS AT BEAUMONT

BEAUMONT, Tex., Apr. 19. — Magnolia Petroleum Co. has started work on the installation of six new cracking stills of the Cross type. The stills have an individual capacity of 2,000 bbls. daily.

THE CONVERSION OF WASTE INTO PROFIT

What is to be done with Oil-Coke Residue?

With the introduction and adoption of highly perfected cracking processes in the oil refining industry the problem of profitable disposal of *oil-coke residue* arises. Under present refining methods this residue, although of high heat content, has little market value.

To overcome this problem and anticipating the universal adoption of modern cracking processes Fernholtz Engineers have devoted many years to the perfecting of the Fernholtz Briquetting Process. By this very practicable and inexpensive reclamation system the residue is converted into a highly profitable by-product, greatly increasing the revenue of the refinery and permitting of maximum efficiency in operation.

May we have the privilege of forwarding complete data and explaining how the process can be adapted to your refining practice? We believe it is only a question of a short time when every leading refinery using a modern cracking process will adopt this system.

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DERIVING MAXIMUM EFFICIENCY FROM MODERN OIL REFINING

Deep Sand Operations Feature Week

Record Completion in Ventura Field, Developments at Wewoka, Okla., and Boling Dome, Tex., Attract Attenion

The importance to the petroleum industry at large of deeper drilling being carried on in so many areas at this time was emphasized again during the past week when the Associated Oil Co. completed its No. 26 Lloyd in the Ventura Avenue Field in California at a depth of 5,925 feet and the well made 6,800 bbls. of 29 gravity crude during an 18-hour test. This well is the deepest ever drilled in that area and is one of the largest deep sand commercial producers ever drilled anywhere. Deeper drilling in fields in Oklahoma continued to hold attention with the completion in the Wewoka Field, from the deep sand, of two additional good wells, one of which gauged 5,132 bbls. the first 24 hours and the other 1,850 bbls. In the same area, the Dixie Oil Co.'s No. 3 Howard Ligon was deepened three feet and its output was increased to 1,970 bbls. In the Gulf Coast territory, The Texas Company brought in its No. 7 Taylor in the Boling Dome Field in Wharton County and the well flowed 6,000 bbls. of 30.1 gravity crude.

California

The feature of the week in California oil circles was the completion by the Associated Oil Co. of its No. 26 Lloyd in the Ventura Avenue Field. The well is located about 1,000 feet east of No. 101 Lloyd which was in the extreme eastern part of the field. The new well started flowing from a depth of 5,925 feet, making it the deepest producer in that area and one of the largest producers from such a depth in the world. The electorate of Huntington Beach voted to open for drilling on an area about six blocks square along the ocean front and it is expected about 10 tests will be started there when the necessary permission is arranged.

Oklahoma

The deep sand area of the Wewoka Field continues to hold the interest in Oklahoma. The Magnolia Petroleum Co. completed its No. 3 Harjo there and the well made 5,132 bbls. the first 24 hours. The Independent Oil & Gas Co. and the Atlantic Oil Producing Co. brought in their No. 1 and it made 1,850 bbls. The Dixie Oil Co. deepened its No. 3 Howard Ligon and increased its flow to 1,970 bbls. Grady County probably will receive some attention as a result of a showing encountered by the Carter Oil Co. and Marland Oil Co.

Louisiana-Arkansas

Extension tests in the Lisbon Field in Arkansas and drilling of a number of wildcat tests in Louisiana featured the week in that territory. Dowling & McCurry's No. 1 Swope, Section 18-19-1e, in Grant Parish, Louisiana, caused some excitement in the Georgetown area when it was reported the test was making 500,000 feet of gas.

Gulf Coast

Boling Dome, in Wharton County, came back with two completions totaling 9,500 bbls. The Texas Company's No. 7 Taylor, 750 feet from the discovery well and 537 feet deeper, made 6,000 bbls. of 30.1 gravity oil. The Oxford Oil Co.'s No. 2 Floyd, an offset to No. 7 Taylor, made 3,500 bbls. of 33.4 gravity oil. The area of the dome has now been extended covering 5 miles across.

The Sun Oil Co.'s No. 31 River on the north side of the Humble Pool is flowing 1,500 bbls. of high gravity oil, and the company is starting Nos. 32, 33 and 34.

The Gulf Production Co.'s No. 22 Hager fee in the Orange Pool is flowing 2,000 bbls.

The Texas Company's No. 7 Taylor, in the Boling Pool, is holding up around 5,500 bbls. through a one-half inch choker. The daily average for the district is now around 9,000 bbls., which is the peak for the pool. It was opened last December.

Mills Bennett is preparing to test 57 feet of sand in No. 5 Japhet at Barber Hill around 2,670 feet.

Canada

A new and pronounced interest is being manifested in the Canadian West in the oil prospects of western Saskatchewan.

Kansas

The Harris Pool, between the two "golden lanes" in Greenwood County, Kansas, was extended last week and the Wrightsman Petroleum Co. found a showing of gas in a test in Ellsworth County.

New Mexico

Geologists from a number of the larger companies are checking southwestern Lea County.

Rocky Mountain Area

The Moab discovery well in Utah has been cemented and is waiting for test before being drilled in. The second well on Schaffer Dome is at 350 feet and will not be in for a month or more. The pipe line is presenting a difficult problem owing to the high cliffs along the river.

There is danger of the Lance Creek Field, in Wyoming, being flooded unless operators begin a concerted campaign, Bureau of Mines engineers report.

Central West

Interest centers chiefly in Michigan where Monroe County is coming in for a leasing campaign.

A wildcat venture in the Roundhead Field of Hardin County, Ohio, with a light showing of both oil and gas is arousing local interest.

The Yelton well in Friendville Township, Wabash County, Illinois, reported around 50 bbls. flush, is expected to start much new work in that field being 1½ miles west of the discovery well on the Biehl farm.

Pennsylvania-West Virginia

Drilling old wells deeper is a feature in Marshall and Harrison Counties, West Virginia, very few wells now being abandoned before drilling through all known formations. Searching for strictly new productive territory has for the present been practically abandoned. Southeastern Ohio failed to maintain its pace and West Virginia also completed fewer wells.

Kentucky-Tennessee

The new H. Z. Clarke Pool in Clay County, Tennessee, in a horseshoe bend of the Obey River, has produced over 3,200 bbls. of 40 gravity oil in storage tanks. It has had two wells with initial production estimated at 500 bbls. and two others 50 and 60 bbls. A lot of drilling is going forward in the belief that a new pool of considerable extent has been found.

A well 2 miles south of Willow Grove, Clay County, a new district, flowed over the top of the mast.

Southwest Texas

The Utah Texas Co.'s wildcat in southern Bexar County, is reported in the middle of the Buda lime which is saturated with oil. It is the most interesting wildcat in the San Antonio area and looking especially good.

The Continental Oil Co.'s well in Zavala County also looks good. It is one of the few cable tool tests in south Texas.

The Texas Company's test in Zapata County, got salt water, gas and oil. The showing will mean talk of deeper drilling in Mirando.

Mexico

Huasteca Petroleum Co. brought in No. 75 Cerro Azul in the South field for 20,000 bbls. and No. 64 Tierra Blanca for 1,000 bbls.

Mexican Eagle Co.'s No. 38 Cerro Veijo in the South fields is good for 10,000 bbls.

North Central Texas

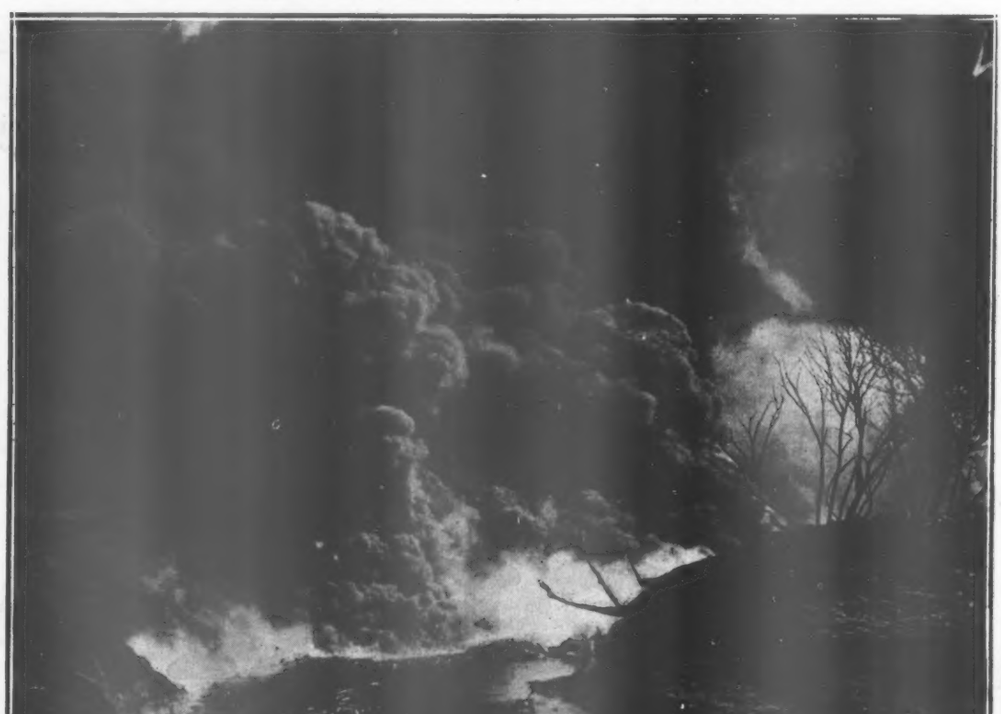
There was a slight increase in the daily average production in the Panhandle which stood at 10,847 bbls. Work has been started by the Gulf Pipe Line Co. upon a gathering line. In Hutchinson County the Skiatex Oil Co.'s No. 1 Kingsland, flowed 2,100 bbls. the first 16 hours after shot.

The difference in depth between the Marland and Zock No. 1 Keith in Upton County and the Independent Oil & Gas Co.'s well strengthens the belief they are producing from different strata.

There is an unusual amount of wildcatting in west Texas and many think the next big pool will be found there, arguing that the Big Lake Pool is not the only productive spot in that section of the State.

Owens & Sloan's well on Chalk ranch, southeastern Howard County, flowed 40 bbls. and opens new field.

WHEN MILLIONS OF BARRELS OF CRUDE BURNED IN CALIFORNIA



A river of burning oil at San Luis Obispo tank farm of the Union Oil Co. of California.

New Field in Howard County, Texas

Owens & Sloan's Well on Chalk Ranch Is Expected to Be Followed By Drilling Campaign. Major Companies Hold the Close-in Acreage

By J. L. Dwyer
Staff Correspondent

FORT WORTH, Tex., Apr. 20.—A campaign of development in southeastern Howard County is expected following the completion of Owen & Sloan's well on the Chalk ranch. Most of the close-in acreage is held by major operating companies. The Owen & Sloan well hit the pay at 1,577 feet, being carried down 7 feet to 1,584 feet. Gas was encountered at 1,337 to 1,352 feet. It flowed 40 bbls. from 1,586 feet and tubing is being run.

It is located in the southeast corner of the northeast quarter of Section 113, Block 29, W. & N. W. survey, in the southeastern corner of Howard County, 1½ miles north of the Sterling County line and 3½ miles west of the Mitchell County line. S. S. Owens and S. A. Sloan are independent operators with offices in Colorado. They hold 1,390 acres in the vicinity, including the 240-acre tract on which it was drilled and 190 acres of close-in land. The Magnolia, Tidal, Pure Oil, Marland, Gulf Production and Humphreys Corp. hold acreage about the well. With the exception of 200 acres, part of which comprises the homesite, all the land about the well has been leased.

Crude Situation Firm

Spring sunshine tackled the job of repairing the leaky clouds which had dampened the landscape and also the activity of the North Texas oil fields for several weeks, and by the application of heat "Old Sol" welded the rifts sufficiently to stop the downpour and give the straw hat merchants a chance. The rain-soaked roads have impeded the fields operations for some time, and with the spring rains a thing of the past a much greater activity may be expected.

The crude situation continues very firm and market students estimate that approximately 25,000 bbls. daily are being withdrawn from storage. The fact that no major pools were discovered in this area last year is indicated by the fact that crude stocks are some 13,000,000 bbls. less than this time one year ago.

There were no startling developments during the past week, with a scattered activity prevailing through the counties which have attracted attention, Brown, Callahan, Coleman Counties in east Texas and Crane, Upton and Reagan Counties in the territory generally referred to as the "San Angelo country," of west Texas. There is an unusual number of wildcat wells started in the west Texas territory, and many who have given the region close scruntiny express the opinion that the next big pool in Texas will be found in that area. They base their prediction upon the fact that Big Lake is not the only productive spot in west Texas.

A well which is continuing to be closely observed is the Marland Oil Co. and Zock's No. 1 Keith in Upton County, close to the Crane County border. This well is northeast of the well completed some time ago by the Independent Oil & Gas Co., and the difference in depth of the pay sand in the two wells is claiming much interest in an effort to correlate the wells. The Independent well found the pay at approximately 2,100 feet and the Marland well at 2,570 feet. The majority of executives who have studied these formations believe the two wells are producing from different strata.

The Big Lake Oil Co.'s No. 51 University in the Big Lake Field, flowed 3,468 bbls., indicating that much may still be expected from that field.

The Transcontinental Oil Co.'s No. 1 Ross, 6 miles southwest of the Mexia Field in the Nigger Creek section of Limestone County, found what is thought to be the Mexia formation at 2,890 feet and drilled to 2,891 feet with a show of oil. This well is reported to be on a "high" which parallels the famous Balcones Fault, and in the event that it becomes a producer, it will cause much excitement in this region.

During the past week it was announced that The Texas Company will consolidate its North Texas offices by moving all branch offices to Fort Worth. The only men not affected by this move will be the district engineers, geologists and field men. All department heads will be located at Fort Worth in the future in an effort to centralize control.

Panhandle Production

The Panhandle showed a number of completions which caused a slight increase in the daily average production, giving a figure of 10,847 bbls. per day. Work has been started by the Gulf Pipe Line Co. upon a gathering line which will run to a loading rack. As far as can be ascertained there has been no move by the Gulf Co. to start the construction of the contemplated line from Wichita Falls to the Panhandle Field. In Hutchinson County, the Skiatex Oil Co.'s No. 1 Kingsland was shot with 565 quarts at 2,860 feet, and the well flowed 2,100 bbls. the first 16 hours after the shot.

The daily average production for North Texas fields follows:

	Barrels
Stephens district	37,263
Wichita Falls district	92,068
West Texas district	36,751
Panhandle district	10,847
Total	176,928

Hutchinson County

Newby Oil Co.'s No. 1 Cockrell, 460 bbls. at 3,031 feet; Phillips Petroleum Co.'s No. 1 Whittenburg, 100 bbls. at 2,947 feet and No. 2 Whittenburg made 240 bbls. on the swab at 2,946 feet. Skelly Oil Co.'s No. 1 Whittenburg is good for 200 bbls. at 2,948 feet; Sunny Jim Oil Co.'s No. 1 Whittenburg, 500 bbls. at 2,946 feet.

Wichita County

Maer & Stanforth's No. 1 Crudup, dry at 1,860 feet; E. J. Stump & Co.'s No. 1 Chilson, dry at 1,845 feet and No. 2 Dutton, dry at 1,835 feet; Bridwell, Hydrick & Moore's No. 2 Waggoner, dry at 1,570 feet; Cochran & Myers' No. 1 Sheldon, dry at 2,004 feet; Culberson Co.'s No. 37 Waggoner, 25 bbls. at 1,525 feet.; E. A. Dale and others' No. 10 Birkett, 20 bbls. at 1,690 feet; Humble Oil & Refining Co.'s No. 2 Waggoner, 20 bbls. at 588 feet; Magnolia Petroleum Co.'s No. 54 Rio Bravo, 100 bbls. at 1,558 feet; Staley & Winn's No. 4 Hines, dry and abandoned at 970 feet; Texhoma Oil Co.'s No. 1 Waggoner, 35 bbls. on the pump at 1,507 feet, and No. 1 Douglas, dry at 2,000 feet; No. 17 Waggoner, dry at 601 feet.

Wilbarger County

Barkley & Meadows' No. 2 Bond, dry at 2,500 feet; Humble Oil Co.'s No. 3 Waggoner K., 70 bbls. at 2,340 feet; Magnolia Petroleum Co.'s No. 71, H. & T. C. Survey, 38 Bbls. at 1,675 feet, and No. 48 Piper, dry at 2,020 feet; Phillips Petroleum Co.'s No. 5 Waggoner C, 35 bbls. at 1,905 feet, and No. 1 Waggoner SS, 35 bbls. at 1,890 feet; Roxana Petroleum Corp.'s No. 6 Waggoner A. 75 bbls. at 1,939 feet; The Texas Company's No. 1 Zipperle, dry at 2,978 feet.

Archer County

Barkley & Meadows' No. 23 Wilson, 60 bbls. at 1,523 feet; Burns & Maxson's No. 4 Jackson, dry at 1,605 feet; N. B. Chenault and others' No. 2 Parish, 36 bbls. at 1,586 feet; T. G. Lomax, Jr.'s No. 1 L. Wilson, dry at 1,600 feet; McCarty Oil Co.'s No. 9 Wilson, 25 bbls. at 1,600 feet; G. L. Pace and others' No. 1 McCarty, dry at 1,550 feet; Roxana Petroleum Corp.'s No. 1 Mangold, dry at 1,838 feet; Shaw-Rathke's No. 1 Wilson, location abandoned; Texhoma Oil Co.'s No. 8 Hamilton, 53 bbls. oil and 11½ bbls. water at 1,807 feet; American Refining Co.'s No. 8 Portwood, 5 bbls. at 1,399 feet; Camp Oil & Gas Co.'s No. 2 Bell, dry at 1,150 feet; R. I. Carter's No. 4 Cowan Estate, 82 bbls. at 1,061 feet; Consolidated Oil Co. and J. S. Cosden's No. 4 Oldham, swabbed 700 bbls. at 1,386 feet; No. 2 Oldham, dry at 1,385 feet, and No. 3 Oldham, dry at 1,383 feet; Craig & Wilson's No. 1 Isham, dry at 1,003 feet; Creath & Medder's No. 1 Tubersville, dry at 1,503 feet; Decher and others' No. 1 Halley, dry at 1,701 feet. Fisher & Gilliland's No. 9 Rogers, 96 bbls. at 1,367 feet; Golding & Cochran's No. 1 Connor, dry at 1,617 feet; Humble Oil Co.'s No. 7 Hamilton, swabbed 100 bbls. at 1,243 feet, and No. 2 Wolfe, made 300 bbls. on the swab from 1,357 feet; Ilseng Production Co.'s No. 2 Prideaux, Block 15, 3 bbls. at 673 feet; Magnolia Petroleum Co.'s No. 21 Lowe, 10 bbls. at 1,256½ feet; No. 10 Portwood, 25 bbls. at 1,420 feet; Pandem Oil Corp. & Simms Petroleum Co.'s No. 13 Pandem, 60 bbls. at 1,448 feet; Pioneer Oil Co. & Beardsley's No. 2 Wolfe, 8 bbls. at 1,384 feet; Roxana Petroleum Corp.'s No. 2 Cockrell, dry at 1,507 feet, and No. 3 Cockrell, 22 bbls. at 1,449 feet; The Texas Company's No. 8 Beardon Estate, swabbed 155 bbls. at 1,087 feet; Texhoma Oil Co.'s No. 3 Wolfe B, swabbed 95 bbls. at 1,361 feet; L. W. Tarkenton and others' No. 1 Kafer, dry at 1,900 feet; Western Oil Corp.'s No. 1 Camp, 15 bbls. oil and 1 bbl. water at 1,754 feet.

Clay County

Lowry Oil Corp.'s No. 1 Culbertson, dry at 1,900 feet.

Montague County

Humphreys Oil Corp.'s No. 2 Howard, 40 bbls. at 1,360 feet; E. L. Smith Oil Co.'s No. 2 Maddox, 5,000,000 feet of gas and 95 bbls. of oil at 2,126 feet.

Young County

R. I. Carter's No. 6 Benson, 50 bbls. at 933 feet; Reed & Anderson's No. 2 Leberman, dry at 1,012 feet; Bashara and others' No. 3 Marshall Estate, 40 bbls. at 2,846 feet; Coones & Hotchkiss' No. 2 Scarborough, 40 bbls. at 4,385 feet; Pitzer & West's No. 1 Burgess, dry at 2,227 feet.

Throckmorton County

Humble Oil Co.'s No. 1 Ledbetter, swabbed 72 bbls. at 778 feet; Red Bank Oil Co.'s No. 1 Parrott, 360 bbls. at 3,946 feet.

Shackelford County

Heck and others' No. 1 Reynolds, dry at 1,390 feet. Jackson and others' No. 1 Hadley, dry at 925 feet. Milham Corp.'s No. 1 Spell, dry at 980 feet; Moutray Oil Co.'s No. 2 Snyder, 30 bbls. at 2,215 feet; Roeser & Pendleton's No. 1 Cook, 443 bbls. at 1,305 feet; Ziegler & Fentiss' No. 1 McKeever, 3,000,000 feet of gas at 1,953 feet.

Stephens County

Livingston and others' No. 1 Hodges, 5,000,000 feet of gas at 1,982 feet; Quakins Petroleum Co.'s No. 12 Harmon, 15 bbls. at 2,095 feet.

Eastland County

Magnolia Petroleum Co.'s No. 8 McMinn, 30 bbls. at 1,497 feet, and No. 2 Rice, 15 bbls. at 1,502 feet; Jim Amy and others' No. 1 Conneellee, 4,000,000 feet of gas at 2,967 feet; Hart Brothers'

(Continued on Page 158)

Late News From the Fields

OKLAHOMA

The Magnolia Petroleum Co.'s No. 2 Harjo, CWL NE NW NW, Section 5-7-8, started flowing 210 bbls. an hour from sand at 4,170-73 feet.

Eearight and others' No. 1 Grayson, SE NE SE, Section 33-10-6, was flowing 5 bbls. an hour with 4,000,000 feet of gas from 1 foot in the sand topped at 4,114 feet. This is just about 3 miles north of the I. T. I. well.

Garber deep sand production for the week ended April 20 was 29,245 bbls. oil and 27,835 bbls. of water from 67 wells.

Sinclair Oil & Gas Co.'s No. 33 N. Walker, C NE NW NE, Section 13-22-4w, was swabbing and flowing 100 bbls. from sand at 4,340-58 feet and No. 33 N. Walker, C SE NW NE, same section, made 2,192 bbls. at 4,305-25 feet.

Several wells in the Wewoka Field are getting down near the deep pay horizon, and should add considerable production soon. The Dixie Oil Co.'s No. 1-B Garner, in the NE NE of Section 5-7-8, was drilling at 4,143 feet.

The Prairie Oil & Gas Co.'s No. 1 L. Hawkins, in the NE SE NW, Section 6-7-8, topped the Hunton lime at 4,042 feet with a show of oil and was drilling at 4,053 feet. The same company's No. 1 I. Walker (Producers & Refiners Corp.) in the C SW SW SE, Section 32-8-8, topped the Hunton at 4,032-34 feet and was drilling ahead with a little oil in the hole.

The Independent Oil & Gas Co. and Atlantic Oil Producing Co. planned to drill their No. 1 in the SW cor. NW of Section 5-7-8 a little deeper Tuesday. Sand depth, corrected, is 4,173-79 feet, but while the sand has been drilled 6 feet, the bit is only about 6 inches or a foot in the pay, the upper 5 feet of sand containing just a few showings of oil.

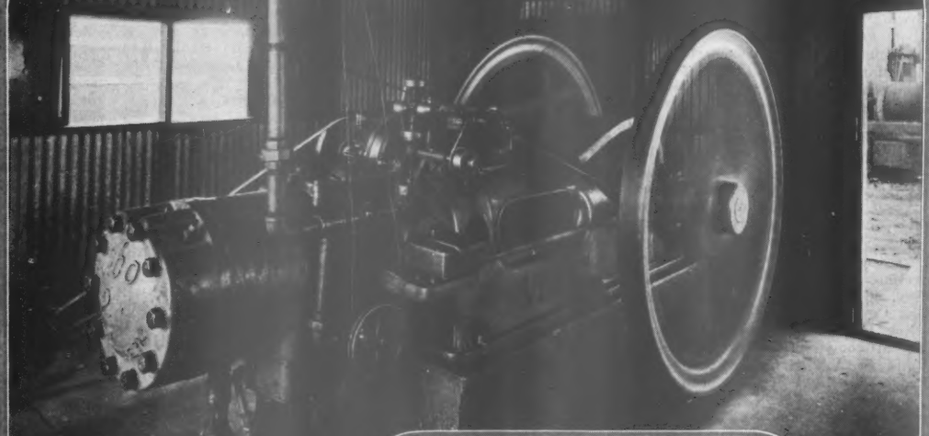
The Magnolia Petroleum Co.'s No. 5 Franz, SE cor. SW SW, Section 32-8-8, diagonal northeast offset to the discovery well, had a hole full of water in the Hunton lime at 4,101-06 feet. Due to the freakishness of the Hunton formation in this part of the country, its contents mean practically nothing as an index to what the Wilcox sand contains.

In the Garber Pool, the Roxana Petroleum Corp.'s No. 5-H, NW cor. SW, Section 18-22-3w, which came in Wednesday, April 15, flowing 250 bbls. the first hour from sand at 2,716-18½ feet, gauged 4,119 bbls. Tuesday morning. The same company's No. 1-L, in the SW SW of this lease which flowed about 4,500 bbls. last week was making 1,606 bbls. of oil and 54 bbls. of water Tuesday morning from total depth of 3,038 feet. No. 5-W, twin to No. 5-H, topped sand at 3,610 feet and at total depth of 3,640 feet made its maximum flow on April 15, gauging 1,192 bbls.

In Lincoln County, the Independent Oil & Gas Co.'s No. 2 Howard, NW cor. SW SW, Section 5-15-6, had Dutcher sand at 3,785-89 feet and made one flow.

Following is the production of the deep Wewoka wells as gauged Tuesday morning: Magnolia's No. 1 Harjo, 20 bbls.; No. 3 Franz, 2,638 bbls.; No. 3 Harjo, 4,840 bbls.; W. R. Ramsey's No. 4 Amos, 2,592 bbls.; Homa-Okla's No. 2, 3,835 feet; Amerada's No. 1 Frederick, 5,100

(Continued on Page 158)



This TICO has swabbed 24 hours a day for 1 year

Since March 25, 1925, this 35 H.P. "Tico" has been swabbing 24 hours a day, on Comar Oil Company's Endicott 8-W, Tonkawa, bringing up 800 to 1200 feet of oil each pull.

G. T. Enochs, left, states the only repair job has been a set of rings, and that at no other time has delay been caused on account of the engine, nor has there been any lack of ample power. Recently this engine handled a triple load, on a fishing job—a full load of oil and two strings of tools. The other men shown are C. H. Schnorr, right, of the Continental Supply Company, and Harry Nieble.

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CONTINENTAL

Boling Dome Well Makes 6,000 Barrels

And No. 2 Floyd, Offset to No. 7 Taylor, is Estimated Producing 3,500 Bbls. in Wharton County, Texas, Field

By P. L. McGreal
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Apr. 19.—The Boling Dome is to the fore again with two completions good for 9,500 bbls which has caused operators there to perk up a bit. The gross daily average production for the week shows an increase of 2,698 bbls. All the pools have practically recovered from the effects of the windstorm at the end of March and conditions are normal. Five wildcat tests were abandoned during the week.

Completions during the week number 21, of which 6 were dusters and 2 salt water holes. The new production totals 11,415 bbls.

The estimated daily average gross production for the week ending April 17 is placed at 94,362 bbls. compared with 91,764 bbls. during the previous seven-day period.

The following is the estimated daily average gross output for each pool during the week:

Pool—	Gross Bbls.
Boling	5,500
Batson	1,475
Blue Ridge	550
Barber Hill	112
Big Creek	900
Dayton	100
Damon Mound	920
Edgerly (La.)	875
Goose Creek	8,700
Humble	4,620
Hull	19,700
High Island	70
Jennings (La.)	1,280
Lockport (La.)	3,200
Markham	75
Nash	200
Orchard	130
Orange	12,925
Pierce Junction	1,900
Piedras Pintas	250
Spindletop	3,570
Saratoga	1,300
Sour Lake	4,350
South Liberty	5,400
Vinton (La.)	6,560
West Columbia	9,500
Welsh-Anse La Bute (La.)	80
Miscellaneous	120
Total	94,362

Southwest Fields

The estimated daily average gross production in the southwest fields for the same period is placed at 39,443 bbls., compared with 39,873 bbls. last week. Hereafter the Laredo, Jim Hogg County and Zapata County production will be grouped under the term "Mirando," that being the pipe line classification.

The estimate for each district is as follows:

District—	Gross Bbls.
Luling	22,606
Mirando	6,575
Somerset	2,250
Calliham	215
Rockdale-Minerva	900
Lockhart	6,903
Total	39,443
Grand total for week	133,805
Grand total last week	131,637
Increase	2,168

Wells Completed During Week

The Boling Pool did not look so promising early in the week with but 2,984 bbls. of production from eight wells. Late in the week the situation changed when The Texas Company's No. 7 Taylor came in making 6,000 bbls. initial at 3,875 feet. It is located 750 feet southwest from the discovery well, but the producing sand is 537 feet deeper than in the first well. The oil is 30.1 gravity. A location has been made for No. 9 Taylor, 400 feet southeast from No. 3, the discovery well. The Oxford Oil Co.'s No. 2 Floyd came in making 3,500 bbls. at 2,975 feet. The gravity is 33.4. It is practically an offset to No. 7 Taylor. The Oxford Oil Co.'s No. 3 Floyd is drilling around 3,100 feet. The Texas Company's No. 5 Taylor bailed salt water at 3,560 feet and is being drilled deeper. No. 8 Taylor is temporarily idle. The Atlantic Oil Producing Co. worked over No. 2 Taylor into a 700-bbl. producer at 3,090 feet. The Sinclair Oil & Gas Co.'s No. 3 Taylor is setting a liner at 3,982 feet. It looks like a well. The Atlantic company set and cemented liner in No. 3 Taylor at 2,940 feet. The Humble Oil & Refining Co. is bailing No. 1 Hawes after working it over at 3,180 feet.

The Vacuum Oil Co. has the deep test hole in the pool to date, drilling No. 1 Hooper below 4,360 feet in a crystalized sand showing some oil. It is northwest of production.

The dome area is constantly being extended in the Boling Pool, until now the salt area is believed to be more than 5 miles across. Consequently operators are spreading out in an effort to get away from the dome and yet be within the sand probabilities. The Gulf Production Co.'s No. 1 Mick, 3 miles north and east from the present confined productive area, is drilling around 650 feet. The Texas Company has made locations for No. 1 Farmer and No. 1 Weems on the northeast side of the dome, between 2½ and 3 miles from production. Both leases are on the east side of the San Bernard River. J. K. Hughes Development Co.'s No. 1 Mullins, northeast of production, is drilling around 2,700 feet, showing some gas. The Sun Oil Co. has a location for No. 1 Hooper, 3 miles northeast from production.

Humble Pool

The Sun Oil Co.'s No. 31 River on the north side of the Humble Pool came in flowing 1,500 bbls. at 3,232 feet, high gravity oil. Twenty-six joints of 4½-inch screen were set, or about 520 feet. The Sun Oil Co. is starting Nos. 32, 33 and 34 River. The Southern Petroleum Co. is cleaning out old wells on its Landslide lease. The Brane Oil Co. is drilling No. 6 Perkins in the town of Humble. Meskell & Meskell are drilling No. 19 Fondren.

In the Hull Pool, the Republic Production-Houston Oil Co.'s joint No. 51 Dolbear, a workover, was abandoned at 3,280 feet. No. 119 Dolbear is bailing at 2,895 feet. The Gulf Production Co.'s No. 5 Thomas fee is pumping 275 bbls. at 2,975 feet and No. 13 Phoenix is making 150 bbls. at 3,075 feet. The Mecom Oil Co.'s No. 8 Taylor is bailing at 3,775 feet.

At Blue Ridge, the Gulf Production Co.'s No. 6 Luscher is bailing at 3,975 feet.

At Batson, Gulf Production Co.'s No. 166 Wing is a 20-bbl. pumper at 1,150 feet.

The Fountain Production Co.'s No. 1 Pope-Ellis in the Saratoga Pool is a 5-bbl. well at 1,145 feet.

In the Goose Creek Pool, Gulf Production Co.'s No. 5 Wright is pumping 40 bbls. at 1,875 feet. Gulf Coast-Crown Central's joint No. 24 Galliard is making 25 bbls. at 2,778 feet. The Sun Oil Co.'s No. 16 Bartlett-Smith is bailing at 2,500 feet.

Another Spindletop Well

The Yount-Lee Oil Co.'s No. 3 Gladys on the north flank of the Spindletop Dome, came in at 3,050 feet making 3,000 bbls. of fluid, 20 per cent oil. No. 4 McFadden which came in last week flowing 6,000 bbls. initial, is now down to 1,200 bbls. The Lillian Oil Co. abandoned No. 3 Terrell at 975 feet. The Yount-Lee Oil Co. has a derrick up for No. 4 McFadden on the southeast side of the old pool. The Baker Oil Co. has started No. 15 Trembley. The Unity Oil Co. is rigging No. 44 National and Brown-Williams' No. 1 Gladys is a location.

In the Sour Lake Pool, the Peveto Oil Co.'s No. 6 Davis is a 5-bbl. pumper at 675 feet and the Barclay Oil Co.'s No. 1 Bailey is also a 5-bbl. well at 1,600 feet. The Texas Company's No. 230 fee is bailing at 1,725 feet, after being worked over.

In the Orange Pool, the Humble Oil & Refining Co.'s No. 5 Myers will pump and the Orange Petroleum Co.'s No. 11 Chesson was abandoned at 5,075 feet.

The Hyde Production Co.'s No. 1 Masterson on the northeast side of the West Columbia Pool will make a pumper at 3,260 feet.

Wildcats Abandoned

Five wildcats or semiwildcats were abandoned during the week. The Texas Company quit Nos. 6 and 7 Warren ranch at Hockley Dome, 30 miles northwest of Houston, Harris County, at 3,800 and 1,800 feet, respectively. The Hockley Dome is one of the largest in area in the entire coastal region. Something like 40 holes, shallow and deep, have been drilled on and around it during the past 22 years and it is still undefined. The Houston Oil Co. abandoned No. 1 Sun-Dyson at Big Hill in Jefferson County at 3,104 feet. Like Hockley Dome, it, too, has been the scene of much development work dating back over 20 years. Some production, however, has been found at Big Hill, but it is still a prospect.

W. C. Moore abandoned No. 1 Drought in Chambers County at 1,195 feet. It was drilled as a formation test, with a gasoline rig. The Houston Oil Co. abandoned No. 1 O'Connor ranch, Victoria County, at 3,128 feet. It was drilled as a gas prospect.

Three wells were completed in the south Louisiana pools, all being producers. The Gulf Refining Co.'s No. 24 Bright-Penn in the Edgerly Pool is flowing 350 bbls. by heads at 3,150 feet.

The Jennings Petroleum Co.'s No. 2 S. F. S. in the Jennings Pool is heading 250 bbls. at 1,800 feet.

In the Vinton Pool, Atkins-Eichberger Syndicate's No. 1 Johnson is a 50-bbl. well at 2,075 feet.

The Vacuum-Gulf Co.'s joint No. 5 Miller in the Lockport Pool is preparing to test at 4,800 feet. No. 7 is drilling around 3,865 feet and No. 8 at 3,890 feet with No. 9 around 4,455 feet. Casing was set and cemented in No. 2 Friedberg & Wolf at 3,410 feet. No. 1 is drilling around 3,500 feet. No. 3 Farquhar is at 3,333 feet. No. 4 Lock-Moore is drilling at 1,415 feet.

Fort Bend County

At Blue Ridge, The Texas Company's No. 10 Robinson is drilling around 3,710 feet.

Gulf Co.'s No. 6 Moore at Orchard Dome is drilling around 2,734 feet.

At Nash Dome, the Rycade Petroleum Corp.'s No. 2 Flessner is at 3,875 feet and No. 3 Flessner is around 345 feet. No. 6 Nash is drilling below 3,123 feet. No. 7 Nash is at 3,513 feet. No. 4 Wisdom is at 3,719 feet. No. 6 Wisdom is at 1,775 feet.

Hardin County Pools

At Batson, Gulf Production Co. has a location for No. 167 Wing. The Sterling Oil Co.'s No. 4 Hooks is drilling around 1,355 feet. A derrick is standing for the Kirby-Capitol Oil Co.'s No. 5 Hodges in the deep sand area on the northwest side.

In the Saratoga Pool, the Rio Bravo Oil Co.'s No. 5 Fountain is fishing at 3,625 feet. Paggi Oil Co.'s No. 3 Ogden is around 1,435 feet. The Vacuum Oil Co.'s No. 3 Teel, southwest of the pool, is drilling around 3,300 feet.

In the Sour Lake Pool, the Sun Oil Co. has a derrick for No. 1 Jackson, a deep test, and No. 1 Libbie. The Gilbert Oil Co.'s No. 98 fee, is rigging. The Peveto Oil Co.'s No. 12 Carpenter is rigging. The Lake View Oil Co.'s No. 47 Hardin is drilling below 2,135 feet. The Lake Graham Oil Co.'s No. 7 Bashara is around 2,300 feet. The Minor Oil Co. is starting No. 77 fee. The

(Continued on Page 132)

GEOLOGISTS OF LARGE COMPANIES ARE CHECKING IN LEA COUNTY, N. M.

By Special Correspondent

ARTESIA, N. Mex., Apr. 17.—Drilling has been resumed on the Maljamar Oil & Gas Corp.'s No. 1 Baish, in the NE of Section 21-17-32, after recovering a lost bit at 3,240 feet, the formation now being in a hard white lime at 3,265 feet. With the validation work completed on the Grace Mitchell permit in Section 5-17-32, and on the Pearsall permit, in Section 33-17-32, standard tools are being moved to these locations and drilling will start during the coming week.

Twenty men from the geological and engineering departments of the Marland Oil Co. of Denver, are now engaged in detailing southwestern Lea County, between the Maljamar well and the Covert test east of Carlsbad. This is the second time the Marland geologists have worked southeastern New Mexico, the first group of five, under Grant Blanchard, spending a year gathering data and doing field work here.

Geologists of The Texas Company, Gypsy Oil Co., Skelly Oil Co. and Carter Oil Co. and a number of other large companies are also engaged in reconnoissance work in this section.

The first test to be put down by the Ohio Oil Co. in Lea County will be to the west of the Maljamar block. This company recently purchased the Puckett permit, consisting of Sections 12, 13, 24 and 25, Township 17, Range 31.

Interest has been revived in that section east of the field due to Wade & Bujac's No. 1, in the NW NW, Section 19-18-28, encountering wet gas at 1,490 feet. This is the second gas strike in this test, the first being picked up at 910 feet. The pressure is reported to be increasing.

The Mesa Oil Co.'s No. 1, Section 4-19-28, will be a good producer after the bridges, caused by shooting, have been drilled out. This well was shot at 2,662-90 feet, 2,718-35 feet and at 2,836-46 feet. After the first bridge was drilled through the oil rose 1,400 feet in the hole.

The Ohio Oil Co. completed No. 10 New State, which was drilled to 2,360 feet. Work of cleaning out is now under way.

Levers-Wilson's No. 5, in the center of SW SE, Section 18-18-28, was completed during the week, the pay being encountered at 2,187 feet. The hole filled 700 feet in oil following the shot.

A. H. Ramage completed a small well in No. 1, in the SE SE, Section 2-18-28, which was drilled to 2,660 feet. A gauge taken on the Picher Oil & Gas Corp.'s No. 2, on the Cronin permit in

(Continued on Page 110)

Quoting from a discussion between Mr. Walter C. Teagle, President, Standard Oil Co. (N.J.), and Mr. Geo. S. Davison, President, Gulf Refining Co., before the Federal Oil Conservation Board at Washington, D. C., February 10th and 11th, 1926:

(From the official record as printed by the Government Printing Office, Washington)

"Mr. Davison. May I ask Mr. Teagle a question? Mr. Teagle, so long as fuel oil remains the cheapest source of gasoline will not the economic tendency be to absorb the fuel oil regardless of the general level of gasoline prices?

"Mr. Teagle. Absolutely. You would not run on a higher-priced crude if you could make the same product out of a cheaper crude.

"Mr. Davison. So that the question as to what the price of gasoline is at the present time is not, after all, the determining factor. *The determining factor is, is it not, Mr. Teagle, the cheapest source of gasoline supply,* and therefore *the economic tendency is to install cracking facilities and crack the fuel oil?*

"Mr. Teagle. That is the whole point that I tried to make in my paper yesterday."

(*Italics used are ours*)

Universal Oil Products Company
Owners of the Dubbs Process
310 South Michigan Ave
Chicago, Illinois

Two More Good Wells in Wewoka Pool

Deep Sand Producers Gauge 4,824 and 1,850 Bbls. Respectively. Deepening Aids Shallow Well in that Area

By C. D. Lockwood
Staff Correspondent, Oklahoma Fields

The drilling in of two new deep sand producers in the Wewoka Pool of Seminole County, and the deepening of the Dixie Oil Co.'s unusual shallow well west of the field were the outstanding events in the Oklahoma fields during the past week and prevented a substantial decline in the state's output, for the Wewoka deep sand discovery well went dead last Friday and the big Garber Field wells continued their merry way down the toboggan, No. 27 Hartley having gauged 3,700 bbls. of oil and 9,000 bbls. of water Monday morning and Sinclair's No. 30 N. Walker, its west offset, having produced only 1,622 bbls. of crude along with 2,000 bbls. of water in the same period.

The demise of the Magnolia Petroleum Co. 's No. 1 Harjo or Skinner in the NW cor. of Section 5-7-8, which opened up the Wilcox sand pool at Wewoka last December 17, was not unexpected for it had been steadily declining for some time. On April 14 it yielded 1,564 bbls., on the 15th 1,157 bbls. and then dropped to 228 bbls. on April 16 when it went dead. It was plugged back 2 feet and Monday morning's gauge was 80 bbls.

New Wewoka Producers

The two new Wewoka producers are the Magnolia's No. 3 Harjo, SW cor. NW NW, Section 5, directly south of the discovery, and the Independent Oil & Gas Co. and Atlantic Oil Producing Co.'s No. 1, in the SW cor. NW, four locations south of the discovery. The Magnolia's No. 3 Harjo was good for 5,132 bbls. in its first 24 hours, gauged Saturday morning, from sand at 4,161-63 feet, and on Monday morning the gauge was 4,824 bbls. The Independent well found the pay at 4,171-78 feet good for 1,850 bbls. during the first 24 hours. This well was to be deepened a couple of feet Monday.

Following is a detailed report on the eight deep sand producers as of Monday morning:

Co. and well—	Sat.	Mon.
Magnolia Pet. Co., 1 Harjo	0	80
Magnolia Pet. Co., 3 Harjo	5,132	4,824
Magnolia Pet. Co., 3 Franz	2,601	2,517
W. R. Ramsey, 4 Amos	2,712	2,550
Homa-Okla O. Co., 2 Carolina	4,069	3,866
Amerada Pet. Corp., 1 and 2	11,328	10,396
Independent & Atlantic, 1		1,850
Total, 8 wells	25,842	26,082

Deepening Helped Production

The Dixie Oil Co.'s No. 3 Howard Ligon, C NE NW SE, Section 25-8-7, was deepened 3 feet Friday and the output jumped to 1,970 bbls., according to Saturday's gauge but was down to 1,170 bbls. on Monday.

Another deep well at Wewoka due to be drilled in is the Magnolia Petroleum Co.'s No. 2 Harjo, NE NW NW, Section 5-7-8, which topped the Hunton lime at 4,138 feet and had a hole full of oil.

North of the Indian Territory Illuminating Oil Co.'s well in northern Seminole County, F. J. Searight's No. 1 Davis, SE cor. NE SE, Section 33-10-6, was deepened 5 feet to total depth of 4,071 feet without helping it. This well was making 250.000 feet of gas and had 200 feet of oil in the hole.

In eastern Hughes County, Johnson & Ashe found 8,000,000 feet of gas in their No. 1 Bear, C SW SE NW, Section 32-8-11, at 1,385-87 feet, and shut it down for orders. It was still shut down Monday.

Grady County came in for a little attention during the latter part of last week when the Carter Oil Co. and Marland Oil Co.'s No. 1 Horton, NE cor. SW SE. Section 8-3n-5w, located a mile southeast of a small producer, was reported to have flowed for 11 minutes from sand at 2,600-15 feet. The 6-inch was being set Saturday and the company estimates the well as good for about 100 to 125 bbls. The gravity of the oil is 39.4 degrees.

A 75-bbl. estimate was placed on a well in Stephens County about 4 miles southwest of the Kilgore Pool. It is the Magnolia Petroleum Co.'s No. 1 Charleston, NE cor. NW SW, Section 32-1n-5w. Sand was found at 1,687-1,717 feet.

Limit Ingalls Pool

Two dry holes seem to have delimited the Olean or Ingalls Pool in Payne County, since they are located just a quarter of a mile on each side of the discovery well. The Roxana Petroleum Corp.'s No. 2 Stover, NW cor. SW SW, Section 13-19-4, is the one on the north side. It topped the lime at 3,617 feet, found black shale at 3,690 feet and at 3,736-40 feet had sand which put 2,000 feet of fluid in the hole, most of which was water. This offsets the Prairie's No. 2 Erwin. The Magnolia Petroleum Co.'s No. 2 Pleasants, NW cor. SW NW, Section 24-19-4, topped the lime at 3,652 feet, had black shale at 3,745 feet and at 3,768 feet the hole filled up with water.

In the same pool, however, the Roxana Petroleum Corp. deepened its No. 1 Stover, SW cor. Section 13-19-4, 3 feet to 3,733 feet and the output jumped from 1,944 bbls. to 2,154 bbls.

Old Osage County furnished some interesting news this week when Frank Billingslea and the Devonian Oil Co. drilled in a 61,000,000-foot gasser southeast of Hominy. The well is No. 1 in the SE cor. SW SE NE of Section 24-21-9, and the gas was found in the top of the Bartlesville sand at 2,144-39 feet. Several other gas wells in the vicinity of this test indicate that this well is on a large structure with interesting possibilities below if the gas can be drilled through. Charles Page owns the gas lease in this area.

In the jool just northwest of Blackwell, Kay County, where considerable work is going on now, the Arkansas Fuel Co.'s No. 3 Kelly, NW SW SE, Section 4-27-1w, was flowing 10 bbls. an hour from sand at 3,430-37 feet.

Garber Field

North of the Garber Field in the same township, the Enid 80 Oil Co. and others' No. 1, in the NW SE NW, Section 1-22-4w, was dry and abandoned at 1,573 feet.

The Mid-Continent Petroleum Corp. and Marland's No. 18, SW cor. SE, Section 12-22-4w, swabbed 45 bbls. from sand at 4,390-4,520 feet. The Prairie Oil & Gas Co.'s No. 11, SE cor. same section, swabbed 186 bbls. from sand at 4,495-4,572 feet.

The Mid-Continent Petroleum Corp. and Marland Oil Co.'s No. 62, SE cor. Section 13-22-4w, was completed for 425 bbls. naturally from sand at 3,047-51 feet, after plugging back from 3,054 feet where water was encountered. The same companies' No. 63, SE cor. NE SE, was drilling at 635 feet; No. 64, NW cor. NE SE, at 590 feet; No. 65, SW cor. NE SE, at 530 feet.

The Sinclair Oil & Gas Co.'s No. 33, SE cor. NW NE, Section 13-22-4w, was completed for 2,192 bbls. from sand at 4,305-25 feet. The same company was spudding No. 41, SW cor. SE NE, and was drilling No. 7, SE cor. NE SE, at 670 feet.

Hopper & Chapper were drilling at 1,300 feet in their No. 1, CSL SE NE, Section 16-22-3w, east of the Garber Pool proper.

The Roxana Petroleum Corp.'s No. 4-W, SW cor. NW SW, Section 18-22-3w, was plugged back to the Layton sand at 3,594-3,640 feet where it produced 530 bbls. naturally. The same company's No. 15, NE cor. NW SW, same section, was deepened to sand at 2,468-87 feet where it made 240 bbls.

The Sinclair Oil & Gas Co.'s No. 25, CEL NE, Section 19-22-3w, was completed on the pump for 25 bbls. from sand at 1,375-83 feet, and No. 26, NE cor NW NW, same section, was drilling at 1,260 feet. The Imo Oil & Gas Co.'s No. 6, CWL NW SW, Section 31-22-3w, was shot with 15 quarts in sand at 2,217-39 feet and produced 25 bbls. afterward. No. 7, SW cor. NW SW, was drilling at 100 feet. The Sinclair Oil & Gas Co. pumped 15 bbls. from No. 10, SW cor. NW, Section 31-22-3w, after a 5-quart shot in sand at 2,159-69 feet.

Production by Pools

Following was the average daily production in several important pools for the week ending as indicated:

Burbank Field, Week Ending April 14		
Lewis Oil Co.	15	740
Carter Oil Co.	281	5,937
Comar Oil Co.	7	103
Devonian Oil Co.	16	132
Mid-Co Petroleum Corp.	106	1,180
Gypsy Oil Co.	193	2,507
Kewanee Oil & Gas Co.	26	218
Laurel Oil & Gas Co.	16	137
Lorraine Petroleum Co.	15	86
Midland Oil Co.	39	594
Mid-Kansas Oil & Gas Co.	41	1,064
Peters & Oliphant	3	516
Phillips Petroleum Co.	185	9,867
Delmar Oil Co.	16	771
Phillips Petroleum and Skelly Oil Co.	180	2,315
Prairie Oil & Gas Co.	130	3,793
Producers & Refiners Corp.	29	254
Roxana Petroleum Co.	54	512
Seemans et al	1	15
Simons and Moore	29	213
Sinclair Oil & Gas Co.	144	1,399
Skelly Oil Co.	29	956
Tidal-Osage Oil Co.	42	480
The Texas Company	16	294
Twin State Oil Co.	24	354
Total	1,637	34,477
Kay County Extension of Burbank		
George Bole	2	206
Carter Oil Co.	11	775
Comar Oil Co.	17	910
Mid-Continent Pet. Corp.	16	814
Gypsy Oil Co.	18	312
Laurel Oil & Gas Co.	5	136
Mid-Kansas Oil & Gas Co.	10	692
Phillips Petroleum Co.	32	2,171
Prairie Oil & Gas Co.	4	168
Pure Oil Co.	4	185
Roxana Petroleum Corp.	8	243
Dye & Tomlinson	8	307
Skelly Oil and Phillips Petroleum	20	274
Sinclair Oil & Gas Co.	5	192
The Texas Company	16	198
Twin State Oil Co.	15	750
Total	192	8,273
Total field	1,829	42,750
Burbank Storage		
Phillips Petroleum Co.		3,541,765
Roxana Petroleum Corp and Sinclair Tank		4,000
Sinclair Oil & Gas Co.		2,000
Mid-Kansas Oil & Gas Co.		819,281
Mid-Continent Petroleum Corp.		375,902
George Bole		96,550
Gypsy Oil Co.		1,355,260
Carter Oil Co.		350,228
Dye, Tomlinson		52,486
Total storage		6,597,472
Burbank Runs		
Gulf Pipe Line Co.		4,636
Mid-Continent Pipe Line Co.		5,400
Osage Pipe Line Co.		1,658
Oklahoma Pipe Line Co.		11,809
Prairie Pipe Line Co.		8,493
Kay County Gas Co.		3,762
Sinclair Pipe Line Co.		1,591
Moore Refining Co.		82
Twin State Oil Co.		760
Empire Pipe Line Co.		1,287
Ozark Pipe Line Co.		2,798
Texas Pipe Line Co.		412
Total		42,750
Tonkawa Field		
Amerada Petroleum Co.	38	1,765
Blackwell Oil & Gas Co.	31	707
Carter Oil Co.	4	87
Champlin Refining Co.	2	16
Comar Oil Co.	369	15,128
Mid-Continent Oil Co. and Marland Oil Co.	21	3,052
Gypsy Oil Co.	110	4,498
Healdton Oil & Gas Co.	26	454
Wentz Oil Corp.	50	8,687
McMan Oil Corp.	2	23
Pennok Oil Co.	32	675
Phillips Petroleum Co.	3	52
Prairie Oil & Gas Co.	12	328
Sinclair Oil & Gas Co.	1	7
T. B. Slick and Comar Oil	38	1,833
Southwestern Petroleum Co.	15	281
The Texas Company	12	1,301
White Eagle	7	127
Total	773	39,031
Tonkawa Deep Sand April 13		
Amerada Petroleum Co.	8	1,392
Pennok Oil Co.	7	260
Comar Oil Co.	52	8,967
Gypsy Oil Co.	17	2,009
T. B. Slick	7	1,279
McMan Oil & Gas Co.	1	7
Blackwell Oil & Gas Co.	4	254
Wentz Oil Co.	16	8,020
The Texas Company	11	1,361
Phillips Petroleum Co.	1	14
Mid-Continent and Marland Oil Co.	5	2,952
Total	129	26,525

Garber Deep Sand

Daily average production of the deep sand wells in the Garber Field for the week ended April 13 was as follows, by leases:

Company and lease—	Wells	Oil	Wtr.
Carter Oil Co., Dively	2	166	92
Franchot, Lynds	1	235	0
Healdton Oil & Gas Co., Belveal	2	59	110
Mid-Continent and Marland, School Land	12	1,033	1,500
Prairie Oil & Gas Co., Wishard	1	120	0
Roxana Petroleum Corp., Schroeder	13	10,043	3,500
Roxana Petroleum Corp., Wolfe	1	302	250
Sinclair Oil & Gas Co.:			
Belveal	5	406	764
Denker	2	68	1
Hartley	5	11,964	11,385
W. Kisner	5	1,125	1,313
Shaffer	1	27	1
N. Walker	13	4,946	5,639
Total	63	30,494	24,555
By Companies			
Prairie Oil & Gas Co.	1	120	0
Franchot	1	235	0
Carter Oil Co.	2	166	92
Healdton Oil & Gas Co.	2	59	110
Mid-Continent and Marland	12	1,033	1,500
Roxana Petroleum Corp.	14	10,345	3,750
Sinclair Oil & Gas Co.	31	18,536	19,103
Total	63	30,494	24,555

Osage County

In Osage County, the Owen-Osage Oil Co. was drilling its No. 363, C SE SE SW, Section 33-24-12, at 1,600 feet with a machine. The same company's No. 364, C SE SW SE, Section 2-23-11, was dry and abandoned at 1,640 feet.

A machine was on the ground for the Kewanee Oil & Gas Co.'s No. 3, C SE SE NW, Section 4-22-11, a twin well. Ray Branstetter was drilling at 770 feet in his No. 1, C W half SW, Section 23-22-11.

The Devonian Oil Co. and Tidal Oil Co. completed their No. 1, CWL SE, Section 27-21-10, for 20 bbls. of 35.1 gravity oil after a 40-quart shot at 1,895-1,950 feet. First oil came at 1,930 feet. T. K. Smith was drilling at 200 feet in No. 1, CNL NW, Section 33-21-10.

Rig and tools were in place for the New England Oil & Pipe Line Co.'s No. 1, C SW SW NW, Section 2-20-10, and the Sand Springs Home spudded No. 92, C S half SE, Section 23-20-10. Breene & Hohn had a rig up for their No. 1, C N half SE NE, Section 29-20-10.

The Tidal Oil Co. and Norris were drilling below 400 feet in their No. 4, C S half NE, Section 7-21-11.

The Commercial Drilling Co. was drilling below 550 feet in its No. 1, C NW NW SW, Section 22-21-12.

The Pioneer Petroleum Co. spudded its No. 5, C E half NW, Section 5-20-11, and was deepening an old well, No. 6, CNL SW SE, same section, at 1,825 feet. The Sand Springs Home spudded its No. 1, CSL SE NW, Section 33-20-11.

The Winona Oil Co. was drilling its No. 5, CSL SE NE, Section 29-20-12, at 880 feet.

The Sand Springs Home abandoned its No. 1, SE cor. SW, Section 2-22-12, at 1,005 feet. It had broken sand from 700-936 feet, but no oil.

Northern Tulsa County

In nothern Tulsa County, the Sinclair Oil & Gas Co.'s No. 13, SW cor. SE, Section 12-21-12, was a 2-bbl. completion following a 10-quart shot at 1,420-46 feet. It had been plugged back from 1,530 feet. George D. Roberts was spudding his No.

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17 Hussey, CWL NW NE SE, Section 24-21-12.

The Devonian Oil Co. was spudding its No. 14, CNL NE SW SW, Section 9-21-13, and the Tidal Oil Co. was drilling at 1,135 feet in No. 4-A, CSL NE SW, Section 31-21-13. Barrington and associates were drilling their No. 1, SW cor. NW, Section 5-21-14, at 640 feet, and J. E. Moore's No. 1, SW cor. SE NE, Section 32-21-4, was drilling at 450 feet.

Schreckergost and others abandoned their No. 1-A, NE cor. Section 28-18-13, an old well deepened at 2,165 feet. A. C. Woody had pipe trouble at 1,600 feet in his No. 1-A Brister, NW cor. NE SE, Section 33-18-13.

The Ellen Oil & Gas Co. had a machine on the ground for No. 1-A, NE cor. Section 25-18-14. Thomas Green's No. 1, C E half NE SW, Section 28-18-14, which had 2,000,000 feet of gas in sand at 1,400-68 feet, was completed for 50 bbls. of oil at 1,446-55 feet.

North of Burbank

North of the Burbank Field, the Laurel Oil & Gas Co. had a rig on the ground for No. 1, C SW SW NE, Section 27-28-6.

In the north end of the Burbank Field, the Phillips Petroleum Co. had a rig up for No. 16, NE cor. SW, Section 1-27-5. The Skelly Oil Co.'s No. 7, NE cor. SW, Section 2-27-5, was shot with 100 quarts and completed for 120 bbls. in sand at 2,945-90 feet. The Phillips Petroleum Co. also had a rig up for No. 16, NE cor. Section 12-27-5. The Mid-Kansas Oil & Gas Co. completed No. 10, C NE SW NW, Section 26-27-5, good for 80 bbls. after a 40-quart shot in sand at 2,962-80 feet, total depth being 2,984 feet.

Following is the status of some new wells in the Burbank Field: Phillips Petroleum Co.'s No. 1, SW cor. Section 7-27-6, drilling at 450 feet; No. 2, CSL SE SW SW, at 350 feet; No. 3, CSL SW SE SW, at 630 feet; No. 4, SE cor. SW, at 520 feet; No. 5, CWL NW SW SW, at 965 feet; No. 9, CWL SW NW SW, at 780 feet; No. 13, NW cor. SW, at 600 feet; No. 4, SE cor. SW, at 630 feet, all in Section 7-27-6.

The Kewanee Oil & Gas Co. completed No. 14, CEL NE SE SE, Section 18-27-6, for 80 bbls. after shooting with 120 quarts in sand at 2,908-80 feet. First oil was found at 2,925 feet.

The Carter Oil Co. was building a rig for No. 9, SE cor. NW, Section 9-26-6. The Phillips Petroleum Co. spudded No. 15, CNL NW NE SE, Section 20-26-6, and also No. 16, NE cor. SE, same section. The same company was drilling No. 13, NW cor. SW, Section 21-26-6, at 540 feet, and No. 14, CNL NE NW SW, at 350 feet, and was spudding No. 15, CNL NW NE SW, and No. 16, NE cor. SW, Section 21. The Lewis Oil Co. was also drilling at 450 feet in its No. 1, NW cor. SE, same section, and spudded No. 2, NE cor. SE, same section. The Mid-Kansas Oil & Gas Co. spudded No. 2, CWL SW NW NW, Section 22-26-6, and No. 4, SW cor. NW, same section.

Southwest of Pawhuska, The Texas Company had a machine up for No. 1, C NE NE SW, Section 29-25-8.

The Tidal-Osage Oil Co. was drilling its No. 5, C NW SE SW, Section 24-24-8, at 150 feet. The Continental Oil Co. completed its No. 4, C SE NE SE, Section 29-24-8, for 60 bbls. in sand at 2,606-11 feet. Sidwell and others abandoned their No. 15, CEL NE, Section 35-24-8, an old well deepened, at 2,499 feet.

The Tidal Oil Co. had a rig on the ground for No. 3, C NE SE, Section 20-24-9.

Kay County

In eastern Kay County, between the old Mervine Pool and Burbank, Jack O'Haver's No. 1, C SE NE NE, Section 22-27-4, was dry and abandoned at 3,616 feet.

In western Tulsa County, three dusters were reported. The Sand Springs Home plugged No. 1, CNL NE SE NW, Section 3-19-11, at 2,439 feet; P. W. Fusselman abandoned No. 1, CNL SW NE, Section 28-19-11, at 1,260 feet; and J. W. McCullouch's No. 7, CSL NE NE, Section 34-19-11, was dry at 2,325 feet.

Due south of Tulsa, W. C. Cates abandoned his No. 1-A, SW cor. NE, Section 13-18-12, at 1,050 feet.

The Blackwell Oil & Gas Co. had a rig up for No. 1 Moore, C NE NE SW, Section 8-27-1w, and was drilling at 525 feet in No. 7, C NW NE NE, Section 9-27-1w. The Marland Oil Co. abandoned the location for No. 2, C NW SE, Section 17-27-1w, and was building a rig for No. 1 Cade, C NW NW NW, Section 31-27-1w.

Creek County

A 10-bbl. well was completed in the Cushing Field. It was the Sinclair Oil & Gas Co.'s No. 13 Bacon, NE cor. SE SE, Section 16-17-7, and found the sand at 2,957-59 feet. It was an old well drilled deeper.

The Savoy Oil Co.'s No. 3, CWL NW SE, Section 22-17-8, was shot with 60 quarts and produced 25 bbls. afterward from sand at 2,323-55 feet. Gravity of this oil tests 42.2 degrees. The Barnsdall Petroleum Corp.'s No. 2, NE cor. SE SE, Section 27-17-8, was a completion good for 47 bbls. naturally, and 25 bbls. after shooting in sand at 3,190-3,205 feet. T. B. Slick spudded No. 3, NE cor. SW, Section 27-17-8.

The Riverside Oil Co. abandoned its No. 1, NW cor. SW NW, Section 29-16-8, at 3,880 feet.

In the southern part of the county, The Texas Company was drilling at 1,025 feet in its No. 4, SE cor. SW SE, Section 12-14-8.

Brumett, Christy & Thornton's No. 1, NW cor. Section 10-18-11, was shot with 65 quarts and responded with 35 bbls. output from sand at 1,875-87 feet.

In the Chicken Farm Pool, on the Tulsa-Sapulpa Highway, the Sun Ray Oil Co. and Munn Brothers' No. 3, CNL NW SE NW, Section 6-18-12, was drilling at 500 feet, and No. 4, CWL NW SE NW, at 450 feet. The Sunray Oil & Gas Co.'s No. 1-A, SW cor. SE SW, Section 31-19-12, had a rig up. It is just across the line in Tulsa County.

The Devonian Oil Co.'s No. 2, CEL SE NE, Section 14-19-8, was good for 350 bbls. naturally, with 3 per cent b. s., from sand at 2,374-2,426 feet.

Caskie Agnew's No. 1, NW cor. NE, Section 6-18-12, was dry and plugged at 2,072 feet.

The Shaffer Oil & Refining Co.'s No. 4, NW cor. NE NE, Section 17-17-11, was completed with a 7-quart shot in broken sand from 2,530-50 feet, making 304 bbls.

The Atlantic Oil Producing Co. abandoned its No. 2, SW cor. NE SE, Section 29-16-8, at 3,856 feet.

The Prairie Oil & Gas Co.'s No. 6, NW cor. SW, Section 22-17-9, was drilling at 900 feet.

C. G. Tibbens completed a good well in his No. 22, CSL SW SW NE, Section 30-15-9, which was good for 710 bbls. naturally from sand at 3,051-58 feet. His No. 25, C NE SW, same section, made only 5 bbls. naturally, however, and 15 bbls. after a 70-quart shot in sand at 2,257-85 feet. He had timbers on the ground for No. 27, CSL SW NE, Section 30-15-9.

The Transcontinental Oil Co. abandoned its No. 1, SE cor. SW, Section 31-14-9, at 3,830 feet.

Timbers were on the ground also for Hall & Donnelly's No. 2 Knight, NE cor. SE SW, Section 20-14-10.

Okmulgee District

The Shaffer Oil & Refining Co.'s No. 9, C SW SE SE, Section 17-15-11, started off at 800 bbls. and was completed for 500 bbls. from sand at 2,950-86 feet. C. E. Campbell and others had a rig on the ground for No. 2 Smith, CWL NW SW, Section 24-15-12.

Simmons & Kellough had a 40-bbl. well in their No. 1, NW cor. NE, Section 21-14-11, from sand at 2,931-49 feet.

A machine was on the ground for the Kingwood Oil Co.'s No. 1 Washington, NW cor. SE NW, Section 17-14-12, and a rig was up for the same company's No. 2 Berryhill, NE cor. SE NE, Section 21-14-12. W. B. Pine spudded his No. 2, C SW SE SE, Section 25-14-12.

E. L. Robinson and Gibson Zahnizer Corp.'s No. 1, CSL SW SW SE, Section 14-13-11, an old well deepened, was completed for 5 bbls. in sand at 2,484-2,552 feet. The Texas Company had a rig up for No. 1 Jones, CSL SW SW NW, Section 28-13-11, and J. H. Rebold was building a rig to deepen his No. 3 Friday, SW cor. Section 29-13-11.

The Independent Oil & Gas Co. plugged its No. 14, CSL SW NW, Section 27-16-12, as a failure at 2,892 feet. The Devonian Oil Co. was building a rig for No. 5 Tiger, CEL SE, Section 24-16-12, and the Independent Oil & Gas Co. had a rig on the ground for No. 15 Coleman, SW cor. NE NW, Section 27-16-12.

The Leonard Petroleum Co. was spudding No. 2, CWL SW, Section 19-16-13, and the Anglo Texas Oil Co. spudded No. 1, NW cor. SW NW, Section 29-16-14. Newbro & Hazen were drilling at 600 feet in their No. 1 Anderson, NE cor. NW NE, Section 36-16-14.

The Devonian Oil Co. and Independent Oil & Gas Co. had a rig on the ground for No. 15 Weisner, CEL SE SE, Section 7-15-13.

The Independent Oil & Gas Co. abandoned its No. 11, CEL NW SW, Section 1-15-14, an old well deepened, at 2,206 feet. W. B. Pine and others were drilling at 300 feet in their No. 1, NW cor. Section 10-15-14. A rig was up for H. L. Jolly's No. 1 Bruner, SE cor. SW, Section 16-15-14, which is to be deepened. J. L. Selby spudded No. 5, CSL NE SE, Section 21-15-14.

F. R. Smith's No. 1, SE cor. NW SE, Section 35-14-13, was drilling at 680 feet.

Aksarben's No. 8, CWL SE NE, Section 1-14-14, was drilling at 350 feet.

A duster was plugged by Odell & Hensen in their No. 2, NE cor. SE, Section 33-13-15, at 2,990 feet.

Hughes County

The Magnolia Petroleum Co. was drilling No. 1, C SW SW NW, Section 18-9-9, at 650 feet.

McCulloch abandoned his No. 1, C SW NE NE, Section 27-9-9, as dry at 3,453 feet.

The Kingwood Oil Co. spudded No. 1, C NW SE SE, Section 29-8-9, and the Papoose Oil Co. was drilling its No. 1, C SE NE SW, same section, at 405 feet.

Lincoln County

In the Skelly-Ford area, the Mid-Continent Petroleum Corp. completed its No. 1, NW cor. Section 8-15-6, after shooting it with 50 quarts and 160 quarts in sand at 4,025-48 feet, total depth being 4,256 feet. The well made 65 bbls. the first 24 hours and was down to 12 bbls. at latest report. The Magnolia Petroleum Co. spudded its No. 1, NW cor. NE SW, same section.

In the Davenport Pool, The Texas Company's No. 1-A, NW cor. SE SE, Section 2-14-5, made 40 bbls. the first 8 hours from sand at 3,356-3,420 feet. The same company's No. 5, SW cor. SE, Section 2-14-5, was shot with 110 quarts and responded with 280 bbls. from sand at 3,365-3,430 feet. The Prairie Oil & Gas Co.'s No. 19, CSL SW NW, Section 3-14-5, was good for 105 bbls. naturally from sand at 2,647-53 feet. Timbers were on the ground for the Magnolia Petroleum Co.'s No. 4 Thompson, SW cor. SE NE, Section 4-14-5. The Pure Oil Co. had a good well in this area in its No. 1, NE cor. SE SE, Section 4-14-5, which was shot with 40 quarts and responded with 402 bbls. of 45.1 gravity oil from sand at 3,407-77 feet. Timbers were on the ground for the Magnolia Petroleum Co.'s No. 2, Chapman, NW cor. NE SE, Section 10-14-5, and the Phillips Petroleum Co. had a rig up for No. 5, SW cor. NE, same section. The Prai-

(Continued on Page 136)

HARRIS POOL, KANSAS, EXTENDED; ELLSWORTH GETS SHOWING OF GAS

By C. D. Lockwood
Staff Correspondent, Kansas Fields

An extension to the Harris Pool between the two "Golden Lanes" of Greenwood County, a showing of gas in Ellsworth County, and numerous deep dry holes, sums up the interesting features of the week's operations in Kansas fields. The Harris Pool extension was made by the Prairie Oil & Gas Co. in its No. 1 Fletcher, SE NW NW, Section 12-22-10, which found sand at 2,013-94 feet and filled up 800 feet with oil.

The Ellsworth County gas showing was in the Wrightsman Petroleum Co. and Phillips Petroleum Co.'s No. 1, C SW, Section 3-16-8w, and was found at 1,134 feet. The well is drilling ahead, the contract calling for a depth of 3,750 feet.

The Manhattan Oil Co.'s No. 21, C SE SW NE, Section 10-23-9, was shot with 140 quarts and produced 200 bbls. afterward. Top of the sand was at 2,343 feet, first oil at 2,375-2,406 feet, and water at 2,406-11 feet. The hole was plugged back to 2,406 feet. The same company's No. 22, C SE SE SE, same section, was drilling at 805 feet. The Skelly Oil Co.'s No. 2, C NE NE NE, Section 15-23-9, was drilling at 225 feet, and the Mission Oil Co.'s No. 6, C SE SW SW, Section 19-23-9, at 350 feet.

The Manhattan Oil Co. had a rig up for No. 11 Dales "B", C NW NE NW, Section 25-23-8, and was drilling at 675 feet in No. 11, CEL SE NW NE, same section.

The Empire Gas & Fuel Co.'s No. 6, C NE SE NW, Section 6-22-10, was drilling at 545 feet. The Mississippi Valley Oil Co.'s No. 1, C SW SW SW, Section 7-22-10, was drilling at 175 feet. The Sinclair Oil & Gas Co.'s No. 39 Browning, C NE NE SW, Section 20-22-10, was rigging up. The Neely Oil & Gas Co. was drilling at 750 feet in its No. 1, C NW NW SE, Section 27-22-10. The Tidal Oil Co.'s No. 9, C SW NW, Section 29-22-10, was shot with 120 quarts and made 250 bbls. of 42 gravity crude afterward from sand at 2,400-58 feet. The Tidal Oil Co.'s No. 14, C NE SW NW, same section, was drilling at 1,000 feet.

The Skelly Oil Co.'s No. 2, C NE NW NW, Section 1-23-9, was drilling at 1,075 feet.

Roth & Farout were drilling their No. 1 Burgess, C NW NW NW, Section 15-23-10, at 500 feet. The Mid-Kansas Oil & Gas Co. had a rig on the ground for No. 27 Allen, C NE SE NW, Section 23-23-10, and the Pure Oil Co.'s No. 7, CWL NW, Section 26-23-10, was drilling at 280 feet. Roth & Farout and the Mississippi Valley Oil Co. had a rig up for No. 7 Thrall "B", CWL SW NE, Section 27-23-10.

A rig was up for the Empire Gas & Fuel Co.'s No. 12 Kiefer, C SE NW SE, Section 11-22-11. The same company's No. 4, C NW NE SW, Section 14-22-11, was shot with 140 quarts in sand at 1,876-1,918 feet, and produced 200 bbls. of 41 gravity oil afterward. The Empire Gas & Fuel Co.'s No. 8-A, C SW NE NW, same section, a twin well, was drilling at 335 feet, and No. 7, C SE NW NW, same section, was completed for 75 bbls. after a 100-quart shot in sand at 1,864-1,904 feet, while No. 6, C SW SE NE, Section 15-22-11, was drilling at 680 feet.

Simmons and the Amerada Petroleum Corp. had a rig up for No. 2 Ellis, C NE NE SW, Section 26-23-11.

The Mid-Continent Petroleum Corp. spudded its No. 4-A, C NE SE NE, Section 28-23-13. Able & Rhodes were rigging up their No. 4 Blackwell, C SE SW NE, Section 16-24-13.

Roth & Farout and the Mission Oil Co. were drilling their No. 10, C NE SW NE, Section 1-24-9, at 1,025 feet.

The Peerless Oil Co. abandoned its No. 1-A, C SW SW SE, Section 31-24-11, as dry at 2,019 feet.

The Kinney Oil Co.'s No. 7, C NE SE NW, Section 10-26-8, was drilling at 900 feet.

A 75-bbl. well was completed by the

(Continued on Page 136)

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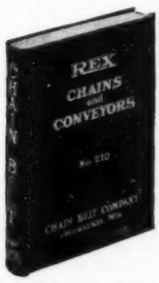

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Efforts Made To Extend Lisbon Field

Large Companies Have Started to Develop Acreage in that Area of Arkansas. Louisiana Wildcat Interesting

By James H. Dameron
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Apr. 19.—Extension tests in the Lisbon Field in Arkansas and the numerous wildcats in Louisiana furnished the most interesting news in the district during the past week as the producing areas maintained their usual pace.

In the Pine Island area, Gulf Refining Co. has decided to mud off present production at its No. 17 Lane, Section 13-21-15, and explore deeper horizons. The well was completed last week in a hard lime formation at 3,674-76 feet making approximately 8,000,000 feet of gas, spraying 23 bbls. of oil and 500 bbls. of salt water.

The gas died down to about 4,000,000 feet daily and was spraying 20 bbls. of oil and 450 bbls. of hot salt water when it was decided to deepen. The gas, oil and water is being mudded off preparatory to drilling deeper, possibly to the true Trinity sand unless more production is encountered on the way down.

The size of the hole, in the opinion of some operators, may keep the test from reaching the Trinity. The tools are drilling in a 4½-inch hole.

Test Disappointing

Woodley and Collins' No. 1 Kilburn, Section 18-19-13, Bossier Parish, proved disappointing after promising to show good in the Woodbine. In sand at 2,563-71 feet the test showed some oil and salt water and 400 feet of fluid rose in the hole, mostly water, overnight. The test was deepened 4 feet but deepening only served to increase the water showing and failed to increase the oil. The test is to be deepened.

Down in Grant Parish, Dowling and McCurry's No. 1 Swope, NE cor. SE SE, Section 18-19-1e, is causing a flurry of excitement in the Georgetown area. The test topped sand at 1,615 feet and the 6-inch was cemented at 1,600 feet. It is reported the test is making 500,000 feet of gas from between the 6-inch and the surface casing.

Georgetown is 5 miles southwest of Tullos and is in the general region of the big wildcat play predicted for central Louisiana this year. The plug at the Swope test is to be drilled out within the next few days.

The bulk of Urania's 1,100-bbl. slide in production despite its 1,085 bbls. of new production, was the result of the antics of McWilliams and Fosters' No. 1 J. D. Russell, Section 25-10-1e. The well came in last week with a flush production of 2,000 bbls., and by the end of this week it was making around 400 bbls. This, coupled with the decline of other producers, pulled Urania's average down when the pool apparently would have recorded its production with five figures, from its 103 producing wells.

Rapid Development

Regardless of several disappointments, operators are continuing a rapid development policy in that area. At the end of the week, 40 wells were drilling, 12 waiting for standard rigs, 5 rigging up, 24 derricks standing and 4 locations.

Degman and Youngblood are to give the northeast area a play and try to extend production about 1 mile northeast of the Hunt and associates' extensioner in Section 7-10-2e. They have a derrick pattern built for No. 1 Hardtner-Tannehill, SW NW SE, Section 8-10-2e. Hunt and associates' well was completed for 250 bbls.

Another test that is being followed with interest is the Louisiana Oil & Refining Co.'s No. 5-A Tremont, Section 35-10-1e. It is reported to have a fair showing of oil. If completed for a commercial producer it will be the first in Section 35, and will extend production a short distance southwest.

In Webster Parish, the Magnolia Petroleum Co.'s No. 1 Bible, Section 8-20-9, failed to get an oil showing when tested at 4,281 feet and when the plug was drilled out it tested salt water. It is to be drilled deeper.

Outstanding of the many lease trades during the past week was the sale by D. C. Richardson of six 40-acre tracts in the Pine Island area to E. M. Jones and C. H. Murphy, El Dorado, Ark., operators. The tracts sold for $5,000 cash each and $20,000 in oil making the deal involve $150,000.

The acreage sold was the NE NW, Section 24-20-15; SE SW, Section 13-20-15; NW SE, Section 14-20-15; 40 acres of Section 12, west of Bayou Dooley; NW SE, Section 7, and the SE NW, Section 18-20-14. By the terms of the lease the assignees agreed to start drilling on a 2,300-foot test within 90 days after the completion of Richardson's No. 13 Youree-Randolph, Section 13-20-15.

Outside Tests Interesting

As the proven acreage in Lisbon continued to be developed rapidly operators in that area directed their attention to the outside tests of the pool. The Humble Oil & Refining Co. and the Roxana Petroleum Corp., are the new operators to start developing their acreage there.

One-half mile due south of production and in Section 21-17-16, the Ohio Oil Co. and the Imperial Oil Co. have started drilling on the two tests that will tell the story of the pool's future that far south. Over in Section 20, and about a mile southwest of production, J. P. Kelly's No. 1 Mitchell, NE SW, is expected to reach the sand before the end of the week.

Due west one-half mile, Long and associates are setting the 6-inch to 2,050 feet to test No. 1 White, NE cor. SW NE, Section 17-17-16. The remaining test claiming interest is the Reliance Drilling Co.'s No. 1 Dumas, NW SW SE, Section 10-17-16, three-quarters of a mile west of production and on acreage that does not look promising. The 6-inch was cemented at 2,138 feet.

The increased activity in the proven field brought the total number of drilling operations up to 30 and six wells are waiting for standard rigs. Eleven are rigs and 20 derricks are standing. At the end of the week, Union County had 76 drilling, 15 rigging up, 29 derricks and 12 wells waiting on standard rigs.

Although production continues on the increase, considerable oil is being drawn from storage. More than 200,000 bbls. of oil was taken from Smackover storage during March and better than 9,000 bbls. of that oil is being drawn upon daily. Storage oil in the Louisiana fields is also being drawn upon.

Urania's slide in production accounted for the loss in the total production of north Arkansas. All other fields in Louisiana slumped during the past week save Caddo, Bellevue and Cotton Valley. The gains in Lisbon and the two Smackover Fields while the other three fields in Arkansas were losing hent Arkansas production upward and kept the combined production of the two states from falling behind. Lisbon's steady gain is threatening to displace El Dorado from third place in the production column.

PRODUCTION BY FIELDS

North Louisiana	
Bellevue	2,590
Caddo, light	8,560
Caddo, heavy	2,185
Cotton Valley	8,355
DeSoto and Red River	3,940
Elm Grove	615
Haynesville	10,250
Homer	5,785
Urania	8,140
Total	50,420
Arkansas	
Smackover, heavy	135,185
Smackover, light	17,930
El Dorado	7,425
Lisbon	6,260
Nevada	2,985
Stephens	1,560
Total	171,345
Total both fields	221,765
Total last week	220,593
Increase	1,172

Union County

Yielding better than 6,500 bbls. of oil daily, Lisbon finished the past fiscal week with 11 new wells with a combined initial production of 1,081 bbls.

Atlantic's No. 3 Andress, Section 16-17-16, was completed in sand at 2,117-44 feet and making 100 bbls. naturally. Coates and Sowell finally completed their No. 1 Dumas, Section 10-17-16, after a series of delays for a 20-bbl. pumper in sand at 2,075-97 feet. Lion Oil & Refining Co.'s No. 4 Goodwin, Section 16-17-16, is making 136 bbls. daily through 2-inch tubing in sand at 2,109-22 feet.

Marine Oil Co.'s No. 3 Slaughter, Section 9-17-16, was put on the pump and is making 150 bbls. from sand at 2,121-40 feet. Natural Gas & Fuel Co. completed two in Section 16-17-16. No. 3 Andress is good for 125 bbls. naturally through 2-inch tubing at 2,111-26 feet, and No. 4, on the same lease, is flowing 150 bbls. from sand at 2,129-51 feet.

Rovenger Oil Co.'s No. 5 Dumas in Section 9, is flowing 40 bbls. daily from sand at 2,106-36 feet, and the Simms Oil Co.'s No. 2 Dumas, same section, the first well to show a good quantity of gas, is making 2,000,000 feet of gas and 15 bbls. of oil daily from sand at 2,081-2,101 feet. Same company's No. 5 Dumas, on the A Lease, in Section 9, is flowing 60 bbls. daily from sandy shale at 2,076-2,114 feet. Wingfield and associates completed another producer in their No. 5 Slaughter, Section 9-17-16, which is flowing 175 bbls. of oil daily from 25 feet of sand topped at 2,073 feet. Woodley Petroleum Co.'s No. 1 Dumas, Section 9-17-16, was completed for a 110-bbl. pumper in sand at 2,087-2,115 feet.

Atlantic's No. 4 Andress, Section 9-17-16, is being swabbed to test sand at 2,115-33 feet. On the Andress lease in Section 16, Atlantic's No. 1-B is drilling at 75 feet, and No. 2-B is grinding away below the 850-foot level. Playing the country farther south, the Atlantic has a rig up in the NE cor. N half NE SE, Section 16-17-16, for No. 2 Graham, and a derrick up for No. 3, SW cor. N half NE SE. Atlantic also has a rig up for No. 5 Slaughter, CSL S half NW SE, Section 9-17-16, and a derrick up for No. 6 Slaughter, one location north of No. 5.

Lisbon Developments

Bond and Evans cemented the 6-inch at 2,107 feet at No. 1 Kilgoe, Section 4-17-16. Foster and others are drilling at 1,160 feet at No. 2 Slaughter, Section 9-17-16, and Foster and McWilliams have a derrick up for No. 2 Mooty, SW cor. Section 15-17-16. Humble Oil & Refining Co. has started developing its acreage in Lisbon and is getting ready to drill three tests. No. 1 Goodwin, NE cor. NE SW, Section 9-17-16, is a derrick. Humble Oil & Refining Co.'s No. 1 Slaughter, SW cor. E half NE NE, Section 9-17-16, is a rig, and No. 2 in the NE cor. of the section is a derrick pattern. Keisker and associates' No. 1 Harrell, Section 15-17-16, is drilling at 2,075 feet.

Lion Oil & Refining Co.'s No. 3 Goodwin, Section 16-17-16, has 800 feet of oil in the hole from sand at 2,109-24 feet and is waiting for a standard rig. Six and five-eighths-inch casing is being set at 2,050 feet at the Magnolia's No. 2 Dumas, Section 9-17-16, and No. 3 Dumas is drilling below the 300-foot level. Six and five-eighths-inch casing is being set at 2,090 feet at Magnolia's No. 2 Slaughter, Section 9-17-16, and the surface casing was set at 310 feet at No. 3 Slaughter.

Marine Oil Co. has a rig up for No. 5 Slaughter, CNL SW SE, Section 9-17-16. Miller and Cottingham's No. 2 Slaughter, Section 9-17-16, is being swabbed to test sand at 2,100-20 feet, and the 6-inch is being cemented at 2,096 feet at No. 3 Slaughter. A derrick has been built for No. 4 Slaughter, NW cor. W half NW NE, Section 9-17-16. Olvey and Jones' No. 1 Graham, Section 16-17-16, is being bailed to test 39 feet of sandy shale topped at 2,074 feet. Owen and associates' deeper sand test in Lisbon, No. 1 Porter, Section 4-17-16, is

POSSIBILITY OF NEW POOL SEEN IN GOOD SHOWING WEST OF MEXIA

By Special Correspondent

CORSICANA, Tex., Apr. 17.—The excellent showing of oil in the core taken from the Transcontinental Oil Co.'s No. 1 Rose on the Varela survey, between 5 and 6 miles west of Mexia, in Limestone County, has been the subject of much comment here all week and the completion of the well is awaited with unusual interest. The crew may commence drilling into the sand Monday or Tuesday of next week and it will be only a few days until the industry will know whether or not a new pool is to be opened in the East Central Texas territory. The Transcontinental Oil Co. has 1,500 acres under lease and the result in this well means much to it. Pipe was set and cemented at 2,875 feet.

The Navarro Oil Co. has made a location for a test on the Smaller farm, Salizer survey, in Anderson County.

In Cherokee County the completion of Collington and others' No. 3 Clapp, is delayed by a bad fishing job. Humphreys Corp. is rigged up on No. 1 Ousley, on the Dillard survey in the same general neighborhood as the test on the Clapp farm.

In Ellis County the Simms Oil Co. was drilling below 2,550 feet in No. 1 Griffiths in the De La Pana survey.

In Henderson County F. Haynes' No. 3 Bounds was last reported at 850 feet. The deepest drilling well in the East Central Texas territory is in Henderson County.

In Hunt County the Gulf Production Co. was drilling in hard lime at 4,156 feet in No. 1 Hicks, Bordine survey.

In Limestone County, J. D. Sweeney and others' No. 1 Wright, McNulty survey, got a sand at 1,276-81 feet with a 50-bbl. showing the first 24 hours. The crew was cleaning out. The Magnolia Petroleum Co. rigged up cable tools to complete No. 8 Desenberg, P. Varela survey. Casing was set at 2,949 feet. The top of the Austin chalk was penetrated at 2,169 to 2,680 feet.

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drilling in shale at 2,654 feet. Same operators' No. 2 Slaughter, Section 4-17-16, is drilling at 1,050 feet, and a derrick is up for their No. 3 Slaughter, NE cor. S half SW SE.

Six and five-eighths-inch casing was cemented at 2,060 feet at Pure Oil Co.'s No. 2 Dumas, Section 9-17-16. Same company is building a derrick for No. 1 Slaughter, SE cor. N half SW SE, Section 4-17-16. J. D. Reynolds' No. 3 Dumas, Section 15-17-16, has 200 feet of oil in the hole from 34 feet of broken sand topped at 2,131 feet and is waiting for a standard rig. Rovenger Oil Co.'s No. 1 Graham, NW SE SE, Section 16-17-16, is a rig.

Starting Two Tests

Roxana Petroleum Corp. is starting two tests in the north end of the pool. A rig is up for Roxana Petroleum Corp.'s No. 1 Flournoy, SW SE SE, Section 4-17-16, and No. 2, in the SE cor. is a derrick pattern. Simms Oil Co.'s No. 1 Kilgoe, Section 4-17-16, is a rig. Same company is getting ready to develop the Moore lease in Section 16-17-16, and has a derrick up for No. 1, NW NE NE; a rig up for No. 2, SW cor. NE NE; a derrick up for No. 3, NW cor. SE NE, and a derrick up for No. 4, SW cor. SE NE. Stock and associates' No. 1 Dumas, Section 10-17-16, is waiting for cement to set at 100 feet.

Wingfield and associates' No. 3-A Slaughter, Section 9-17-16, is drilling at 2,000 feet. Their No. 6-A Dumas, same section, is waiting for the 6-inch casing to set at 2,062 feet. Six-inch was cemented at 2,060 feet at No. 3 Slaughter, and No. 6 has 1,800 feet of oil in the hole from sand at 2,084-2,102 feet and is waiting for a standard rig. Six-inch is being lowered to 2,059 feet at No. 7 Slaughter, and No. 8 has started drilling. A derrick was erected for No. 9 Slaughter, SE NE SE, Section 9-17-16, and No. 10, CNL N half NW SE, is a derrick. Wingfield's No. 2-A Slaughter, Section 9-17-16, is drilling at 1,235 feet. Six-inch casing was cemented at 2,102 feet at T. J. Woodley's No. 2 Dumas, Section 9-17-16.

Norphlet Area

Of the six completions in the Norphlet area last week, two were failures. Hickman and associates' No. 4 Hayes, Section 21-16-15, was abandoned in red shale at 2,905 feet, and Natural Gas & Fuel Co.'s No. 2 Flenniken, Section 8-16-15, was a hole full of water at 2,497 feet and was abandoned. Pure Oil Co.'s No. 6 Bilyew, Section 8-16-15, is being blown with air and is making 120 bbls. of oil daily from sand at 2,350-82 feet. Estes and associates finished their No. 2 Murphy, Section 15-16-15, in sand at 2,606-14 feet for a 120-bbl. pumper.

E. M. Jones' No. 4 Murphy, Section 17-16-15, is producing from sand at 2,673-88 feet and pumping 50 bbls. daily, 10 per cent salt water. Murdock and associates' No. 2 Vestal, Section 17-16-15, is making 250 bbls., 25 per cent salt water, on the pump from sand at 2,528-31 feet. The remaining completions were in the Smackover Light Oil Field. Barbare and associates' No. 1 Houston, Section 12-16-16, was abandoned at 2,712 feet. Ferguson and associates' No. 2 Howard, Section 7-16-16, was finished for a 25-bbl. well on the pump in sand at 2,634-48 feet.

Tested Salt Water

Broderick and Calvert's No. 5-B Murphy, Section 8-16-15, in the Norphlet area, tested salt water with a show of oil from sand at 2,645-57 feet and was temporarily abandoned. Their No. 6-B Murphy is one foot in sand topped at 2,425 feet and is standing with 1,800 feet of oil in the hole and waiting for a standard rig. No. 7-B is drilling below the 800-foot level. G. J. Childs' No. 2 fee, is drilling at 2,590 feet. Constant Refining Co.'s No. 6 Burns, Section 31-17-15, is drilling at 775 feet. Crestline Oil Co.'s No. 1 Telford, SW cor. E half SE NW, Section 34-17-15, is a derrick pattern.

Six-inch casing was cemented at 2,624 feet at Eason and associates' No. 7 Murphy, Section 15-16-15. Same operators finished a fishing job at 2,540 feet and are cementing a short string of 4½-inch casing at 2,646 feet at No. 3 Palmer, Section 9-16-15. Their No. 3 Murphy, Section 15-16-15, is drilling below the 2,148-foot level. Federal Petroleum Co. is sidetracking the drilling stem at 2,455 feet at No. 6-B Lawton, Section 10-16-15, and is cementing a short string of 4½-inch at 2,603 feet at No. 2-B Wells, Section 15-16-15.

Six-inch casing was cemented at 2,522 feet at the Gulf Refining Co.'s No. 17 Alphine, Section 2-16-15. Same company is fishing for 27 joints of 4-inch casing at 2,401 feet at No. 2 Clawson, Section 14-16-15, and cemented the 6-inch at 2,353 feet at No. 37 Hardy-Murphy, Section 5-16-15. Six-inch was cemented at 2,564 feet at Gulf Refining Co.'s No. 3 McMullen, Section 1-16-16. W. H. Harper's No. 1 Mathews, Section 34-16-16, is drilling at 160 feet. Humble Oil & Refining Co.'s No. 3-B Flenniken, Section 9-16-15, is drilling at 2,440 feet, and the 6-inch is being set at 2,635 feet at No. 2-B Lawton, Section 7-16-15.

H. L. Hunts' No. 1 Murphy, Section 33-16-16, is drilling at 1,100 feet, and No. 1 Swilley, Section 28-16-16, is drilling around the 2,525-foot level. E. M. Jones' No. 2 Murphy, Section 17-16-15, is drilling at 2,555 feet. Eight and one-quarter-inch casing is to be set at 2,471 feet at W. R. Keever's No. 6 Murphy, Section 8-16-15, and the 6-inch is being set at 2,497 feet at Keever's No. 5 Sanford, Section 17-16-15. The 4½-inch is being set at 2,620 feet at Kennebrew and associates' No. 7 Williams, Section 3-16-15. The 4½-inch was cemented at 2,512 feet at Lion Oil & Refining Co.'s No. 1 Wilson, Section 17-16-15.

Tools Lost

The tools were lost in the hole at 2,645 feet at Magnolia's No. 3 LeCroy, Section 17-16-15, and No. 3 Tatum, Section 7-16-15, is drilling at 1,700 feet. Magnolia's No. 4 Tatum, is a rig. The derrick has been temporarily abandoned at Magnolia's No. 6 Hatfield, Section 7-16-15. The hole is being bailed to test broken sand at 2,599-2,607 feet at No. 3 Hessler, Section 8-16-16. Mazda Oil Corp.'s No. 3-H Lawton, Section 10-16-15, has 300 feet of oil in the hole from sand at 2,606-19 feet and is waiting for a standard rig. The 6-inch was cemented at 2,607 feet at No. 6-R Lawton, same section.

Peer Oil Co.'s No. 5 Palmer, CWL E half SE SW, Section 9-16-15, is a rig. Leo P. Purkrul's No. 2 Smith, Section 17-16-15, is drilling at 2,706 feet. Eight-inch casing was set at 2,534 feet at the Pure Oil Co.'s No. 9 Friend, Section 6-16-15. Saxon's No. 2 fee, NE cor. NW SW, Section 4-16-16, is drilling at 1,450 feet. Sinclair Oil & Gas Co.'s No. 8 Flannigan, Section 6-16-15, tested salt water at 2,390-98 feet and the hole was drilled on down to 2,568 feet where the 4½-inch casing is being cemented. Standard Oil Co. is moving in tools to make a gas well of No. 12 McClanahan, Section 6-16-15.

Sun Oil Co.'s No. 8 Hatfield, Section 6-16-15, was drilled to 2,547 feet and the 6-inch cemented at 2,514 feet. Thurman and associates have moved the rig off No. 1 Burns, Section 11-17-16, and temporarily abandoned the test at 41 feet. Unity Petroleum Co.'s No. 8-A Bilyew, Section 8-16-15, is 10 feet in sand topped at 2,403 feet and is waiting on a standard rig with 500 feet of oil in the hole. Unity Petroleum Co.'s No. 9-A, is in sand at 2,470-75 feet with 700 feet of oil in the hole and waiting on a standard rig Same company's No. 2 Lawton, Section 10-16-15, is drilling at 2,165 feet. Williams and associates' No. 2 Goodwin, Section 16-16-14, is shut down at 2,190 feet while the rig is being repaired. Wingfield and associates' wildcat deep test, No. 1 Cruse, Section 27-17-16, is coring salt water sand at 2,884 feet. Woodley Petroleum Co.'s No. 4 Bilyew, Section 8-16-15, was drilled to 2,424 feet and the 4½-inch casing was cemented at 2,420 feet.

Ouachita County

Two of the 11 completions in Ouachita County were failures and two more were abandoned locations. H. M. Harrel's No. 1 Moline Timber Co., Section 32-11-17, in the northern part of the county, was a hole full of water in the Nacatoch sand at 1,161-68 feet and was abandoned. In the northeast end of the Smackover Heavy Oil Pool, Penguin Oil Co., junked the hole and abandoned No. 3 Hardin, Section 27-15-16, and abandoned the derrick for No. 4 Hardin in the same section. Magnolia Petroleum Co. abandoned the location for No. 3 Betty Clawson, Section 35-15-17.

Interocean Oil Co.'s No. 2 Johnette, Section 33-15-16, was completed for a 15-bbl. well on the pump in sand at 2,253-60 feet. A. Meek's No. 3 LaGrone, Section 36-15-17, is pumping 50 bbls. daily from 12 feet of sand found at 2,281 feet. Simms Oil Co.'s No. 9 Reynolds, Section 32-15-15, was finished up in sand at 2,586-88 feet and is making 60 bbls. on the pump. Southern C. O. P. Co.'s No. 6 Joyce, Section 34-15-15, was completed as a gas well making 30,000,000 feet of dry gas from sand at 2,636-40 feet. Sunny Jim Oil Co.'s No. 3 Laney, Section 36-15-16, is pumping 20 bbls. daily from broken sand at 1,954-2,010 feet. In the Stephens district, Equity Oil & Drilling Co.'s No. 1 Morgan, Section 27-15-19, is pumping 20 bbls. at 2,175 feet. J. D. Reynolds' No. 1 Thompson, Section 22-15-19, is pumping 300 bbls. of fluid, 70 per cent water, from sand at 1,476 feet.

Gilliland Oil Co.'s No. 8 Kyle, Section 29-15-16, is in sand at 2,293-2,305 feet and is cleaning out a few feet off bottom. H. M. Harrell has staked a location for No. 2 Moline Timber Co., NW cor. NE, Section 17-12-17. Humble Oil & Refining Co.'s No. 11-B Arnold, Section 26-15-16, tested salt water at 2,365 feet and is shut down waiting for orders. Six and five-eighths-inch casing was cemented at 2,549 feet at Imperial Oil & Gas Co.'s No. 7-A McClannahan, Section 6-16-15. Magnolia Petroleum Co.'s No. 12 Goodwin, Section 5-16-15, has 300 feet of oil in the hole from sand at 2,358-69 feet and is being bailed. A. Meek's No. 4 Lagrone, NW NE SW, Section 36-15-17, is a derrick. Ohio Oil Co.'s No. 7 Goodwin, Section 29-15-15, stopped nine feet in sand topped at 2,614 feet and is waiting on a standard rig with 300 feet of oil in the hole.

Other Operations

Pure Oil Co.'s No. 12 Brister, Section 28-15-15, is drilling below the 2,075-foot level. J. D. Reynolds' No. 1 Smith, Section 13-15-17, north of Kirkland, was temporarily abandoned in salt water sand at 2,255 feet. Simms Oil Co.'s No. 10 Hildebrandt, Section 28-15-15, is drilling at 2,080 feet. Same company's No. 5 T. Murphy, Section 29-15-15, is being delayed by a fishing job at 2,626 feet where several joints of 6⅝-inch casing dropped. Six and five-eighths-inch casing was cemented at 2,568 feet at Sinclair's No. 9 Flannigan, Section 6-16-15.

Smith Drilling Co. set the surface casing at 40 feet at No. 3 Shirey, NW SW NW, Section 36-15-17. Southern C. O. P. Co.'s No. 4-A Umsted, Section 4-16-15, is being bailed to test sand at 2,349-51 feet. Standard Oil Co.'s No. 8-B Murphy, Section 29-15-15, is drilling in gumbo at 1,380 feet. Sunny Jim Oil Co. is arranging to deepen No. 3 Hicks, Section 27-15-16, which was completed some time ago by Bradstreet and associates at 2,021 feet making 1,000,000 feet of gas and 15 bbls. of oil. Six-inch casing was cemented at 2,355 feet at Woodley Petroleum Co.'s No. 4-A Umsted, Section 4-16-15.

In the Stephens district, the Buffalo Oil Co. is drilling out the cement plug

(Continued on Page 129)

EIGHT OUT OF NINE COMPLETIONS IN MEXICO IN NORTHERN FIELDS

By George Blardone

Mexican Bureau, The Oil and Gas Journal

TAMPICO, Mex., Apr. 16.—Twenty wells were completed in Mexican fields last week, of which 11 are failures and 9 can be placed in the production column. Of the producers, all of them can be credited to the northern fields save one, (Mex-Eagle Oil Co.'s No. 38 Cerro Veijo, in the south fields, already reported in a brief bulletin. It was good for 10,000 bbls. at a subsea level depth of 1,926 feet). The total new production can be placed at 15,250 bbls., potential flush.

The northern field producers were as follows: Mexican Petroleum Co., in the Ebano sector of the northern fields: No. 69 La Dicha, rated for 1,500 bbls. at 1,565 feet; its No. 5 Silva for 600 bbls. at 2,300 feet; No. 85 La Dicha at 2,134 feet, say 300 bbls. National Lines' No. 33 Chapacao (right of way in the Ebano sector), good for 1,500 bbls. at 1,850 feet.

In the Panuco sector consider the following: Mexican Gulf Oil Co.'s Nos. 12 and 13 Flores finished at 1,820 and 1,900 feet good for 200 and 600 bbls. respectively. El Sol, in the Federal zone in Tampuche, No. 2 Etienne, is good for 500 bbls. at 2,265 feet. In the Caracol, Venable and others is good for 50 bbls. in No. 33, at 2,635 feet.

The Failures

In the northern fields, the failures follow: In Panuco, Intermex Oil Co. has a junked hole in its No. 2 Tampuche at 1,850 feet. It will probably skid over and drill another well. Mexican Sinclair Petroleum Co.'s No. 10 Gutierrez is a dry hole at 2,058 feet; and in the Cacalilao, its No. 39 Lot 3 is a duster at 1,855 feet. National Oil Co.'s No. 18 Chijoles is reported abandoned at 1,860 feet. Transcontinental Petroleum Co.'s No. 11 Piedras is a dry hole at 2,000 feet; and its No. 267, Lot 4 Cacalilao, is also a duster at 2,220 feet. Williamson and others drilled into salt water in No. 1 Tampuche at 2,181 feet. In the Ebano sector, Mexican Petroleum Co.'s No. 70 La Dicha, drilled into salt water at 2,205 feet; No. 84 is a duster at 2,230 feet. The National Lines' No. 31 Limon, a Federal zone well, is a dry hole at 2,750 feet.

Panuco-Cacalilao

Drilling operations during the past week in the Panuco and Cacalilao sectors of the northern fields are best epitomized as follows: La Corona Petroleum Co.'s No. 13-A La Polla, in the Panuco Field, is in lime with a hole full of oil at 1,985 feet. Credito Petrolero's No. 10 Piedras is spudded. East Coast Oil Co.'s No. 35 Laguna de la Milpa has cemented 8-inch at 1,280 feet in lime; its other Laguna de la Milpa tests are drilling as follows: No. 55, in gray shale at 1,160 feet; No. 58, in gray lime at 1,870 feet; No. 59, in gray shale at 1,135 feet; No. 64, in gumbo at 300 feet. International Petroleum Co.'s No. 266, Lot 5 Cacalilao in gray lime, with an oil show, at 1,825 feet; and its No. 268, same lot, is testing for production at 2,095 feet, lime. Ita Mex Oil Co.'s No. 21 W. Maguabes is in shale at 655 feet; Mexican Sinclair Petroleum Corp.'s No. 24 Tananturo, is in shale and gumbo at 1,180 feet; its No. 25, is in alluvium at 150 feet; its No. 12, Lot 1 Camolote, is in the Tamasopa at 2,025 feet, showing oil; its No. 12 Gutierrez, is in gray shale at 950 feet; No. 13, Lot 1 Cacalilao, is running 8-inch in gray shale at 1,360 feet. Mexican Gulf Oil Co.'s No. 3 Piedras, has cemented 8-inch in gray lime at 1,231 feet; its No. 11 Zuniga, is in gumbo at 1,200 feet, and its No. 18-A Lopez, is rigged. Transcontinental Petroleum Co.'s operations in Lot 4 Cacalilao, follows: No. 238, is in the San Felipe at 1,450 feet; No. 253, has a hole full at 2,045 feet, lime; Nos. 255 and 256, are each in lime at 1,880 and 1,650 feet respectively; No. 260, is in shale at 50 feet; and No. 270, is the same. In the Pasiencia, just north of Cacalilao, its No. 57

(Continued on Page 106)

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Western Saskatchewan To Get a Play

Reports of Discovery of Oil and Gas in Moose Jaw District Result in Numerous Filings Covering Large Acreage

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ont., Apr. 17.—The past few weeks have been marked in the Canadian West by a new and pronounced interest in oil prospects in western Saskatchewan. Extensive filings in the vicinity of Lloydminster, covering a possible extension eastward of the Irma-Wainwright Field of central Alberta, have been followed by reports of the discovery, farther south in the Moose Jaw land district, of indications of oil and gas at Ardill. The report early this week was followed by filings on thousands of acres in the Ardill and Lake of the Rivers districts. The extent and nature of the oil indications has not been disclosed, but the rush to the Moose Jaw land office, which started Monday, has not yet materially let up.

So far, no actual oil or gas production has been secured in Saskatchewan; and results of drilling already carried on, almost wholly in the western section of the province close to the Alberta boundary, have been negative. In comparison with the Alberta drilling, tests in Saskatchewan have been very few. Some 12 years ago, H. L. Williams and associates drilled a deep test near Fusilier, encountering some gas indications, though no commercial production was secured. About the same time some drilling was undertaken, with negative results, in the Estevan lignite area. Later, the Coste interests, connected with the Canadian Western Natural Gas Co. secured a tentative franchise to supply gas to Moose Jaw, and drilled several tests in the Maple Creek district. These were unsuccessful. About the year 1920, Imperial Oil Ltd., in the early stages of its comprehensive development campaign in the Canadian West, drilled three tests in southwestern Saskatchewan, all comparatively close to the Alberta boundary. One at least of these was carried to considerable depth, but none of them secured production. A few years ago the potential oil structure in the Many Islands Lake district of Alberta, northeast of Medicine Hat, was found to extend into Saskatchewan, and arrangements were made by Regina interests to put down a test; but apparently this was not proceded with, pending the results of the drilling on the Alberta side. The Ardill find appears to be related to this structure.

Promising Area

Probably the most promising area is the potential extension eastward from Alberta into Saskatchewan of the Ribstone-Blackfoot structure, recently defined by G. S. Hume of the Geological Survey of Canada. This structure is more extensive than the structures in the Wainwright Field proper. The area on which extensive leasing recently took place is a little south of Lloydminster, Saskatchewan, centering in the William McKay farm. The McKay farm, on Section 10, Township 46-2w4, is 26 miles south of Lloydminster, and 6 miles west of the Alberta-Saskatchewan line, but the leasing has extended eastward into Saskatchewan, and the crest of the dome as indicated by Doctor Hume is between 5 and 6 miles east of the McKay farm, or close to the provincial boundary. Before taking up farming in the west, McKay was a mining prospector in Nova Scotia, and knew something of geology; and his investigation of the surrounding territory convinced him, as long ago as 1916, that it represented an oil prospect. In that year, he went to Edmonton to file for oil on his property, but finding that the propsects of financing an oil venture were negligible, he went no further with the project. In September, 1924, however, when the Government geologists began work on the territory, he filed on 20 acres in Section 10; and later a number of his neighbors also tied up territory in the same section. They subsequently organized the Oxville Gas, Oil & Development Co., which is now preparing to test the McKay holdings.

The McKay farm itself is good arable land but much of the surrounding land is broken up by outcroppings. Traces of oil have been found at a 64-foot depth in the glacial wash. Doctor Hume recommended that tests be drilled on Section 4-46-27w3, and on Section 12-46-1w4, the former on the Saskatchewan and the latter on the Alberta side of the boundary. The Battle River runs through this district and traces of oil have at times been found in the sands of the river, evidently from small seepages. McKay has a theory that the oil has drained into one deep pool on Section 10, where it is impounded and held by a dam of rock, and that 2,258 feet of drilling will be required to penetrate the cap rock.

Irma-Wainwright Field

In the Irma-Wainwright Field, east central Alberta, Edmonton-Wainwright Oils, No. 1 LSD 4, Section 29-45-6w4, is reported to have an indicated production of up to 200 bbls. a day. It is being drilled into the sand. Interior Oil Co., Section 36-44-7w4, is bringing in enough 8¼-inch casing to finish the well. It will resume drilling at 1,200 feet, and will run double tower, operations being in charge of Fred C. Beresford, formerly with the Anglo-Persian Oil Co. in the Persian fields. British Petroleum, Ltd.'s Nos. 2, 3-B and 4 are producing more or less steadily, and regular shipments of crude are being made to the Alberta Refineries, Ltd., at Edmonton, the oil being transported in tank wagons and trucks from the wells to the shipping point at Wainwright. The company has considerable tankage and a large sump in the field to hold the crude. There are indications that British Petroleum's No. 3-B, Section 29-45-6w4, is developing considerable gas, and may turn into a flowing well.

Several new tests are being located in this field. The Anglo-Alberta Oil Co., which last year spotted a test on Section 19-45-6w4, is reported rigging up. The location is on LSD 16, just across the road and southwest from the Britsh Petroleum and Edmonton-Wainwright's producers. Emerald Oil Co. has a location on LSD 8, Section 30-45-6w4, adjoining Britsh Petroleum's No. 3-B, and Edmonton-Wainwright's No. 1, on the west, only the road allowance separating the locations. Mewasin Oils, Ltd. of Edmonton, under the management of Ralph Douglas, M. E., has leased LSD 7, Section 30-45-6w4, and has made a location directly in line between British Petroleum's Nos. 2 and 4, to the northwest half a mile, and British Petroleum's No. 3-B, and Edmonton-Wainwright's No. 1 to the southeast. Wainwright Petroleums, Ltd. has a 40-acre tract west of the Mewasin and close to British Petroleum's No. 4. This is nearer the supposed gas belt on the western edge of the Wainwright structure. All these tests will be drilling this spring, and are likely to finish early in the summer.

In the Medicine Hat Field, southern Alberta, the Roth Syndicate's deep test is drilling close to 3,700 feet and will shortly set the 6⅝-inch casing.

In Border Field

In the Border Field, the Monalta Oil Co. has let the contract and has material on the ground for a test in the outskirts of the "twin cities" of Coutts-Sweetgrass. The test will be drilled somewhat on the Montana side of the boundary, a standard rig being used. The location is supposedly on the eastern edge of the structure tested some years ago on the Canadian side by Imperial Oils, Ltd.'s Red Coulee well, Section 5-1-16w4. The Imperial well, some distance west of Coutts, was drilled to about 2,690 feet. Some indications of oil were encountered, but the test did not yield commercial production, and no further work was undertaken by Imperial Oils, Ltd. in the same area. At Coutts, Urban Oils, Ltd., Section 4-1-15w4, is setting a string of 4-inch casing to shut off the water preparatory to drilling deeper. On the Montana side, a wildcat test, 4 miles west of Kevin on the Leach farm, drilled by the Dupont Oil Co., financed in Alberta, is reported flowing by heads, showing no water, and making around 500 bbls. a day. Production was got in the Ellis sands at 1,760 feet, between 200 and 300 feet deeper than the producing wells farther east. The strike is regarded as indicating a possible extension of the field northwest of Kevin.

East of Coutts, Imperial Oils, Ltd.'s Erickson Coulee, LSD 13, Section 8-1-12w4, has finished rigging up and will spud in next week, with a heavy duty rotary. Imperial Oils, Ltd. has a crew of 24 men in camp and will run three shifts of eight hours each, employing eight men to each shift.

In the southern foothills, Imperial Oil, Ltd. is sending in a crew to the Rice Creek well, Section 4-14-2w4, west of Nanton, to resume drilling at 4,025 feet after the winter shut down. In the Jumping Pond district, 25 miles west of Calgary, Imperial Oil, Ltd.'s No. 1 Bow River, Section 12-25-5w5, is reported down 1,050 feet and drilling. In the northern foothills, 150 miles west of Edmonton, Imperial Oil, Ltd.'s No. 2 Coalspur, LSD 110, Section 3-49-31w5, is down 4,300 feet and the crew pulling 6-inch casing and fishing for a lost joint.

In the Turner Valley Field, southwest of Calgary, Royalite Oil Co.'s No. 5, LSD 13, Section 7-20-2w5, is down 3,180 feet and repairing casing. Royalite's No. 6, LSD 16, Section 31-19-2w5, is shut down at 2,854 feet. Dalhousie Oil Co.'s No. 1, LSD 4, Section 18-20-2w5, is down 3,526 feet and drilling. Dalhousie's No. 3, LSD 10, Section 13-20-7w5, is down 3,254 feet and bailing drillings. Vulcan Oils, Ltd.'s No. 1 LSD 11, Section 13-20-3w5, a half mile northwest of Royalite's No. 4, is down 4,470 feet and drilling. Illinois-Alberta Oil & Refining Co., LSD 14, Section 12-20-3w5, a half mile west of Royalite's No. 4, is down 3,500

(Continued on Page 136)

MOAB FIELD IN UTAH PRESENTS PROBLEM IN CONSTRUCTING PIPE LINE

By F. B. Taylor
Staff Correspondent, Rocky Mountain Area

CASPER, Wyo., Apr. 17.—The Moab discovery well of the Midwest Refining Co. and the Utah Southern Oil Co. has cemented and a test will be made to see whether the cement is holding. If the cement is tight, the well will be drilled in. The second well on the Schaffer Dome is drilling at about 350 feet and will be a month or more before it reaches an interesting depth.

This new area presents a problem to the pipe line department as to how the oil is to be taken out to the railroad. The high cliffs that line the river rise straight from the water's edge in many places so that it is impractical to lay a line along the river bank. The next best plan appears to be to lay the line in the talus slope until one of the side canyons is reached and then lay the line up a canyon until the rim is reached. This is going to present many difficulties and especially the trenching through solid rock in the canyons because the line must be placed below the surface so as to eliminate danger from the floods that are caused by cloudbursts in this region and sweep down these narrow notches in the rocks in a wall of water.

The Associated Oil Co. is another newcomer in the field. Through a purchase of interests in the Westland Oil Co. the Associated Oil Co. has secured holdings in the Moab district and is expected to drill some wells this summer. The Westland Oil Co. is a Utah firm with headquarters at Salt Lake City. The Associated Oil Co. is a California oil firm and has been interested in the Wyoming and Colorado fields for about 10 years.

The land grabbers are also appearing. This class will take up any and all land they can get, the presence or absence of structural indications does not enter into the matter. The main idea is to get some sort of title to some land and float a company on the proposition. The stock sells readily if the promoter is able to show a map indicating the land to be adjacent to wells even though it may be in a syncline where there is no earthly chance of finding production.

Salt Creek Completions

The Midwest Refining Co. completed eight new producers in the Salt Creek Field during the past week. The Midwest Oil Co. drilled a well to the Lakota sand on Section 23-40-79 and went to 2,498 feet. It will make 252 bbls. and will be shut in for the present. The same company completed a second Wall Creek sand well on Section 22-40-79 that only made a nominal production. The well was drilled to 2,328 feet. The same company also found a 50-bbl. producer on Section 26-40-79 at 1,172 feet in the first Wall Creek sand.

The Salt Creek Consolidated Oil Co. brought in a producer of 15 bbls. on Section 3-39-79 at 1,710 feet.

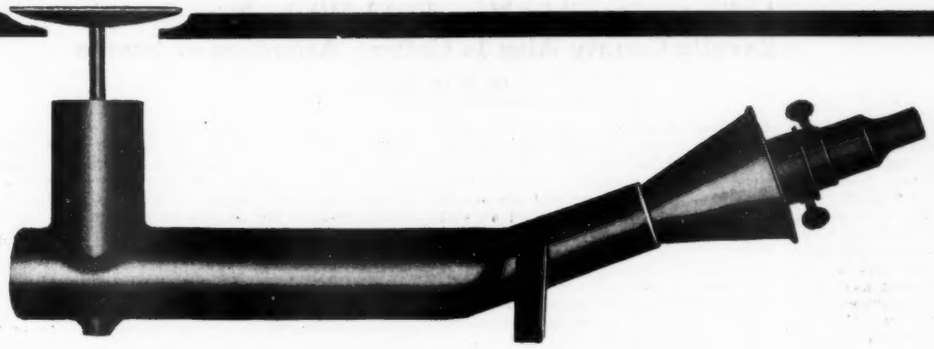
The Wyoming Oil Fields Co. has a small producer on Section 24-40-79 at 1,630 feet and another of the same kind on Section 22-40-79 at 1,630 feet.

The Wyoming Associated Oil Co. completed a producer of 10 bbls. on Section 24-40-79 at 1,290 feet, and the same firm also completed a well good for 20 bbls. on Section 26-40-79 at 1,448 feet.

The LaBarge Field in Lincoln County is nearly shut down because of bad roads. This operation worked all through the winter, but the recent melting of snow and rainy weather combined have done more to stop work there than the cold weather. The trucks hauling crude from the field had to stop, but the better weather is expected to permit the resuming of work the coming week.

The Producers & Refiners will drill

(Continued on Page 145)



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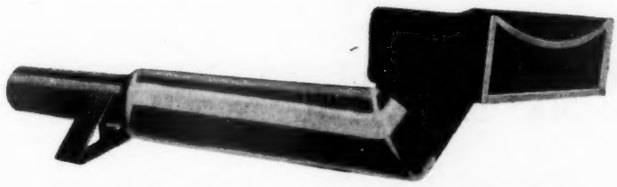

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Bexar County Wildcat on Structure

Indicates Possible New Field While New Test in Zavalla County Also Is Getting Attention of Scouts

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Apr. 19.—Failure of either the Piedras Pintas salt dome field or the Cole Field, both in Duval County, to add new producers, made the past week in South Texas rather dull compared with the week before, although the testing of The Texas Company's No. 2 Jennings in Zapata County which tested salt water but with a considerable showing of oil and gas at a depth of 3,966 feet, the developments in the McClure well on the Ivan Vick in Bexar County, which has proven to be on a structure and within 110 to 120 feet of the Edwards lime, with the earmarks of a possible new field, and the developments in the Continental test in Zavala, also proving to be on a structure, have brought new territory to the front to get the attention of the scouts for the next few weeks.

The Cole Field where the Cin-Tex Petroleum Co. a few weeks ago brought in the discovery oil well alongside a proven and producing gas area has a number of tests drilling but the past week tested out several failures. Houston Oil Co.'s Nos. 2, 3 and 4 seem to be failures and the Cin-Tex No. 3 and the Humphreys-Moody-Seagraves No. 2 a mile to the northeast seem to be failures though they have not been abandoned.

Piedras Pintas

In the Piedras Pintas Field where the Humble company brought in the discovery well on December 20 and which up to this time is the only producing well, four of the five tests drilling close enough to the discovery well to be considered as possibly on the "dome," have already passed the depth (3,623 feet) at which the discovery well is producing and none of them is within sight of production yet. The fifth which is the Magnolia company's is a little below 3,000 feet and with a log that is not checking very good with the discovery well. Its location is three-quarters of a mile to the northwest.

Humble company's No. 5 Walsh, located 450 feet to the southeast, found a rock at 3,785 feet and under the rock got considerable oil and gas showing but not enough to make a well. It cored again at 3,825 feet and still has no well and is drilling and coring below that.

The Moody-Seagraves and William F. Morgan No. 1 Walsh about 450 feet to the west and a little south of the discovery well tested a 19-foot sand at 3,619 feet and got oil and salt water. It bailed 2 bbls. of oil to 6 of water about every four hours. It came back and perforated the liner to take in another sand at 3,400 feet but tested and failed to make a well and is now drilling deeper, and taking frequent cores.

J. K. Hughes Development Co., a half mile north, got a little odor and showing of gas at 3,582 feet but not sufficient to make a well and is now drilling close around 3,700 feet.

Grayburg Oil Co.'s No. 1 Halff, a mile north of the discovery well, is drilling at close around 3,800 feet and with nothing important. Experience teaching that production is had in salt dome areas at varying depths the drilling will continue in all the tests in Piedras Pintas at Noleda on the Texas Mexican railroad.

Bexar County Test

Utah Texas Oil Co. (McClure) drilling a wildcat on the Ivan Vick in southern Bexar County at 2,663 feet in about the middle of the Buda lime and with a structure proven and an elevation of about 100 feet, with the cracks and crevices in the Buda saturated with oil, began to attract new attention last week. It is within about 110 to 120 feet of the point where production would be expected in the Edwards lime which is the producing formation at Luling. The well the past week has become probably the most interesting wildcat in the San Antonio area. Major company paleontologists have examined the cores and are agreed on the formation and surprised as well as pleased at the showing of oil in the Buda. The T. B. Slick well drilled on the E. J. Lamb farm last year is about 1¾ miles to the east and the Arkansas Natural well drilled some time before that on the J. K. Lamb farm about the same distance to the west and a little south, and several other wells drilled in that vicinity on other sides of the Utah Texas well, furnish logs for comparison. Slick topped the Eagle Ford at 2,670 feet and Utah Texas at 2,620 feet, but regional dips and elevation taken into consideration, Utah Texas topped it about 100 feet the highest. The Utah Texas well at 862 feet had a 24-foot sand with a saturation that gave every appearance of being a commercial well and it had another 10-foot sand at 1,317 feet which was the purest sand encountered in south Texas and carrying oil. Now the Buda lime carrying such a high percentage of oil compared with what it does elsewhere in south Texas is making the well look especially good.

Continental Test

In Zavalla County, the Continental Oil Co.'s No. 1 Pryor is drilling at 3,140 feet in the base of the Edwards. It topped the Georgetown at 2,775 feet. The Edwards carried a little sulphur water but not enough to flow. The test was started with the idea of drilling to around 3,500 feet or deeper and getting production in the Glenrose or some other formation below the Edwards and the Edwards was not being counted upon to any great extent. The Old Dominion well a little to the south topped in the Del Rio at 3,650 feet, not having reached the Edwards, showing a very precipitous drop from the Continental well. The Continental well got hung up at around 2,000 feet with various drilling troubles but since getting out of that has made rapid progress. It is a cable tool job, one of the few in south Texas, and the progress made during the past week has brought it into the limelight. It is judged to have possibilities and in the general parlance of the profession is "looking pretty good."

Texas Jennings Test

The Texas Co.'s No. 2 Jennings in Zapata County which since the abandoning of the No. 1 which blew in last fall at 3,965 feet with such a big volume of gas, has been attracting considerable attention, tested the past week at 3,966 feet and got considerable salt water, but with considerable gas and oil. It made salt water by heads. It was bailed down 1,000 feet when it blew in and was making the gas and oil against nearly 3,000 feet of water. Casing had been set at 3,804 feet and the 162 feet of open hole took in two sands. The well as it is, is considered such that the territory cannot be abandoned till more tests are drilled. The Texas Company will run a small string of casing and test the bottom sand and if it fails to produce will seek to plug off the bottom and test the upper sand. No. 1 Jennings got gas in considerable volume at 1,600 and 3,200 feet. The showing in No. 2 Jennings is adding considerable interest and talk of additional deep drilling in the Mirando country.

Bandera County

Homer P. Lee is preparing to drill a deep test of 3,000 to 4,000 feet in Bandera County on a 20,000-acre block of leases on Mason and Myrtle Creeks.

Bastrop County

Cranfill & Reynolds in Bastrop County, a few miles southwest of the town of Bastrop, are drilling in shale at 1,400 feet in No. 1 Hendrix, in the Cedar Creek community. Reiter-Foster are drilling at around 2,000 feet in their W. P. Watts in the same community. Mahone & Wilford, east of Elgin on the Dunk, is a location. Andrews Petroleum Co.'s No. 1 Brundage, east of Elgin, which tested dry in the Edwards lime at 2,956 feet and gave orders to tear down and abandon, cancelled the order and is drilling deeper and at 2,970 feet has a slight showing of oil.

Bee County

Pittsburgh Oil Development Co. is moving in on the Goree farm in Bee County, 18 miles northwest of Beeville (a Benedum & Trees company). Moody-Seagraves, drilling the W. E. Clark test on the Welder farm east of Beeville, have fished out the line and bailer and have started to bail again. Total depth, 2,646 feet, with showing of oil. W. G. Clark spudded, is rigged up and read to spud in on the second wildcat test on the Scott farm, north of Beeville.

Bexar County

Marland Oil Co., after coring its block of leases in eastern Bexar County with diamond drill, has made the location and is rigging up for an Edwards lime test on the Joe Mihalski farm, a mile north of St. Hedwig and 450 feet from the south line and 396 feet from the east line of the 98-acre farm. North of that a few miles, Humble Oil & Refining Co. spudded in the past week and is drilling at 600 feet in shale on the O. M. Stopper farm, 150 feet from the south line and 150 feet west of the Cibolo River. South of Adkins, in eastern Bexar, W. L. McClanahan is completing his fourth shallow 650-foot well on the Sodrok farm.

At Southton, where a shallow field is being developed, pipe line runs from a group of wells at 650 feet for March were about 5,000 bbls. George E. Ginter, in a deep test on the San Antonio Cotton Mill land at Southton, is fishing at 1,850 feet. Ginter has completed several shallow wells at 650 feet and the deep test is to meet contract requirements and will go to the Edwards lime. Five miles due south of Southton, Utah Texas Oil Co. has a showing of oil in the Buda at 2,663 feet.

Brooks County

Pittsburgh Oil Development Co. is setting 10-inch casing at 500 feet in No. 1 Wormser.

Caldwell County

Murchison & Fain's No. 1 Miers, in Caldwell, is drilling at 200 feet. Reiter-Foster Oil Corp.'s No. 1 O. S. Alexander, south of Dale, is drilling at 1,160 feet and in shale. Reiter-Foster's No. 1 Gomillion, north of the Lytton Springs Field, is drilling at about 1,600 feet.

DeWitt County

Yoro Development Co.'s No. 1 Burns, at Edgar, in DeWitt County, is drilling below 2,600 feet.

Frio County

Frio Petroleum Co.'s No. 1 Lyles, in Frio County, which has been shut down for a few months, has resumed and is drilling at 200 feet.

Fayette County

Red Bank Petroleum Co. is drilling in No. 1 Steinhauser, in Fayette, below 2,500 feet. O. W. Killam has abandoned No. 1 Kroether, 6 miles north of Schulenberg in Fayette, due to having twisted off the drill stem at 2,300 feet. Rig has been skidded 75 feet and No. 2 is drilling at 350 feet.

Goliad County

Houston Oil Co. has secured a permit to start its second wildcat test on the Pettus ranch in Goliad County. No. 1, on the Pettus, and No. 1 on the Parks have each been having showings of oil and gas. The company is testing out a structure.

Guadalupe County

In western Guadalupe County Payne & Bond are spudding in their No. 1 Rosen-

(Continued on Page 132)

SAN ANTONIO'S ELEVEN-FOOT FIELD MAY BE REAL BUT NOT IMPORTANT

By B. D. Stevenson

SAN ANTONIO, Tex., Apr. 19.—This city has a "grass roots" oil field discovered in the confines of the city in the district south of the Grayburg Oil Co.'s refinery and bounded by Roosevelt Avenue on the east, Weaver Street on the south, San Antonio River on the west and Palo Blanco Street on the north. It is in the Mission Grove district and oil is found in the discovery well at 11 feet. It was found by the owner of the property excavating for a cess pool.

It is not thoroughly established yet as to whether the oil is coming from its original source, is a seepage from some mammoth "mother pool," or (perish the thought) a seepage from the Grayburg refinery storage tanks. The oil is a light gravity and looks like a distillate. Grayburg pipe line runs near the "field" but it carries the heavy Luling crude and so has a perfect alibi.

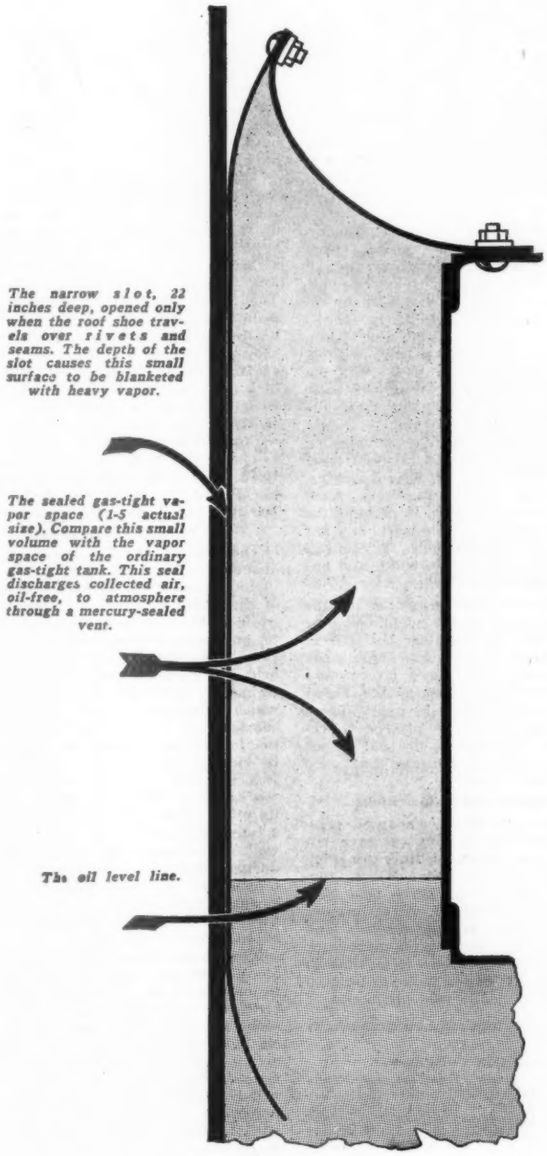
The "field," however, has all the characteristics of a genuine oil boom. Property mounted sky high (but no deals have been closed and no cash paid down). The field is in a residence section and since the original cess pool discovery well was "dug" a score of property owners have started digging oil wells. Thus far they have not bothered to take out permits from the oil and gas division of the Texas Railroad Commission. Eight or ten "wells" have been completed, dug with pick and shovel in a loose gravely formation. The oil is found in gravel.

The field is in a residence section of small houses, on lots 50 by 100 feet and petroleum engineers' estimates that the total recovery of oil under a lot would hardly be sufficient to repaint the house and mow the front yard, has not in the least tended to depress the prices put on property.

The biggest set-back the field is experiencing is from matter-of-fact housewives who are objecting to their flower beds being walked over by "oil investors" coming to visit the field.

As a real matter of fact oil can be found at shallow depths almost anywhere in San Antonio. The Austin chalk nearly always carries a little oil and it outcrops in the northern part of the city. Below the Austin chalk about the next chance to get oil is in the Edwards lime which is the producing formation in Luling—but under much of San Antonio the Edwards lime is furnishing to the city of San Antonio what is claimed to be the purest drinking water to be found in the world. The city's whole water supply is coming from that source.

the Wiggins Seal is gastight


The narrow slot, 22 inches deep, opened only when the roof shoe travels over rivets and seams. The depth of the slot causes this small surface to be blanketed with heavy vapor.
The sealed gas-tight vapor space (1-5 actual size). Compare this small volume with the vapor space of the ordinary gas-tight tank. This seal discharges collected air, oil-free, to atmosphere through a mercury-sealed vent.
The oil level line.

THE Wiggins Seal is gastight to effectively close the space between the pan of the roof and the tank side. If this space is not closed gastight, exaggerated evaporation conditions from this area decrease the effectiveness of a floating roof.

Next to a gastight sealed floating roof a gastight tank is the most effective evaporation prevention device. Its biggest drawback is thermal breathing.

Thermal breathing loss is proportional to the volume of the gastight area. Since the gastight volume of a Wiggins Seal on a 55,000-barrel tank is one per cent of the volume of a gastight tank, the breathing loss is reduced to a negligible amount. Thus gastighting is effective when applied to the space between the floating pan and the tank shell where the volume is very small.

The Wiggins Seal does more than practically eliminate losses through thermal breathing. It separates oil from air. Air bubbles entering the tank through the filling line entrain oil particles as they travel outward to the seal. There the shoe traps them into the gas-tight portion of the seal. As the air must travel circumferentially to reach a vent, all entrained oil is dropped back into the tank. The mercury-sealed vent which opens at one-quarter of an ounce pressure releases the air—free of oil—to the atmosphere.

Equip your present tanks with Wiggins Roofs. And when contemplating new tanks, get our quotation on them equipped with Wiggins Roofs.

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NEW YORK
3147 Hudson Terminal Bldg.

CLEVELAND
2204 Union Trust Bldg.

DALLAS
1641 Praetorian Bldg.

ATLANTA
1054 Healey Bldg.

SAN FRANCISCO
1054 Rialto Bldg.

WIGGINS ROOF

OGJ4-22Gray

Big Well Completed in Ventura Field

Associated Oil Co.'s No. 26 Lloyd Makes 6,800 Bbls. From 5,925 Feet. Largest Producer Brought in in That Area

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Apr. 19.—In an 18-hour test of the Associated Oil Co.'s No. 26 Lloyd, in the Ventura Field, the well produced at the rate of 6,800 bbls. a day and showed a 3,000,000-foot gas production. The oil is of 29 degrees gravity. The well was drilled to a total depth of 5,925 feet and has 1,346 feet of sand zone to draw from. The well is one of the largest completed in California since 1923, and one of the deepest commercial producers in the world.

LOS ANGELES, Calif., Apr. 17.—Daily production in the Long Beach Field is gradually falling off due to a consistent decline in the northwest extension and a further settling in the older part of the field. During the past several weeks completions in the extension have been getting less numerous and the pumping well is the rule rather than the exception. Additional completions will continue coming in at the rate of perhaps one a day for at least another month but they will probably all be comparatively small pumpers. The field's daily average production during the month of March was approximately 110,00 bbls. and the present daily output is running around 105,000 bbls. In view of this drop it would not be surprising if the daily average dropped below 100,000 bbls. during the early part of May.

A. J. Delaney carried off completion honors during the past week by bringing in two new wells, both in the extension. His No. 20 Cerritos, drilled to 4,400 feet and finished with a 4¾-inch liner, was a 35-bbl. pumper, while his No. 29 Cerritos, completed at 4,391 feet and finished with a 4¾-inch liner, is rated at 200 bbls. of 21.3 gravity oil. The B. K. & M. Oil Co. brought in the largest single well finished during the period in question when a test was made of its No. 1 Cerritos, formerly Keck & McWhorter's No. 6. It was drilled to 4,395 feet and finished with a 6¼-inch liner, 110 feet of which was shop perforated. The initial pumping was 241 bbls. of 21.2 gravity oil which cut 2 per cent.

Gets a Good Pumper

The Rainbow Petroleum did not find the proverbial pot of gold but it did succeed in getting a 162-bbl. pumper when its No. 8 was put on the beam. The well, which was carried down to 4,490 feet and finished with a 4½-inch liner, is producing 21.7 gravity oil which showed a cut of 2 per cent. Brealin-Woodward & Sheedy finished their No. 4 Cerritos at 4,439 feet and this well will probably close their development activity in this field. The new producer, which was completed with a 6¼-inch liner carrying 185 feet of shop perforated, is pumping 228 bbls. of 21.4 gravity oil cutting 5 per cent water. George F. Getty has taken over Sam Johnson's No. 3 Cerritos, at present standing suspended at 4,245 feet, and will carry it through to completion on a satisfactory royalty basis. Ed Herwick's No. 25 Cerritos, finished at 4,495 feet, was somewhat of a disappointment as it is only pumping 60 bbls. of fluid, about 25 per cent of which is water.

The Julian Petroleum Corp.'s No. 1 Patton, drilled to 4,425 feet and finished with a 4½-inch liner, was good for 148 bbls. of 21.6 gravity oil on the beam. This company has nine other drilling projects in the extension but, judging by recent completions, they will undoubtedly all be pumpers when brought in. No. 18 Fields of the California Petroleum Corp. was an unusually small well and the quality of oil produced was equally as disappointing. This new producer, which was completed at 4,529 feet and finished with a 6¼-inch oil string, is pumping 50 bbls. of oil and 30 bbls. of water. Because of the excessive cut it will probably be plugged back.

The McKeon Oil Co. has decided to carry its No. 7 Cerritos on down for a deep test and drilling will be resumed within the next day or two at 4,780 feet. The United is also working on a deep test, No. 2 Taylor, which has already passed the 5,100-foot level without picking up any indications of the existence of a lower horizon. The United made a pumping test on No. 4 American, drilled to 4,402 feet and finished with a 6¼-inch oil string, but the best it would do was 65 bbls. of 20.2 gravity oil cutting 10 per cent.

Inglewood

The Standard Oil Co. completed the only new well in the Inglewood Field during the past week when its No. 42 on Los Angeles Investment Lease No. 1 was given a test from 2,392 feet after being finished with an 8¼-inch oil string, 865 feet of which was 70-mesh screen. The well, flowing through a ⅝-inch bean under a pressure of 160 pounds, started off doing 1,292 bbls. of comparatively clean 20.6 gravity oil. No. 43 on this lease is rotating ahead in the oil sand at 2,267 feet and will probably be on production early next week. The company also has two potential producers, Nos. 46 and 51, on the Baldwin Cienega property, formerly operated by the Pacific Oil Co. These two wells, together with No. 5 Stocker, should be tanking oil within the next two weeks. In addition to bringing in a new producer, the Standard Oil Co. chalked up a recompletion in No. 7 on Los Angeles Investment Lease No. 1. This well, cleaned out to 2,521 feet and plugged back to 2,383 feet, was returned to production pumping 100 bbls. daily but, inasmuch as the output is cutting 30 per cent, it does not look as though the plug has proved effective.

When the Associated's No. 2 Vickers sanded up a few weeks ago while on a flow test from the deep zone at 2,986 feet, the company decided to do a little exploration work and accordingly carried it down to 3,210 feet. It was recompleted a few days ago and came back doing around 1,560 bbls. from the latter point but the water content, running around 20 per cent, indicated that the company had drilled through the horizon and run into bottom water. The well at the present time is being plugged back.

The action of the Associated in plugging back is of particular interest at this time in view of the fact that much depends upon the outcome of this well. The other operators in the field are at present sitting tight and if the Associated finds it convenient to suspend work or shut in this well they will undoubtedly hold off development of the deep zone. The operators in this field will not become parties to any general or specific understanding with regard to development of the deep sand but they have practically intimated their desire to hold up work if at all possible. Neither the Standard nor Petroleum Securities has made any move to offset No. 2 Vickers and it is generally understood that no such action will be taken until the well is actually on production.

The latter company's No. 9 Cone, another deep test, was first plugged back from 3,000 feet to 2,825 feet because of bottom water and a second plug has now brought the bottom of the hole up to 2,775 feet, from which depth it will be given a test within a short time. Deep sand possibilities of the Inglewood Field may have had something to do with the construction of the Pan American's new reservoir at Lomita, not far from the Torrance Field, although this of course may not have even been a contributing factor, since the company has been wisely storing up cheap oil for several months. This reservoir, which was constructed in approximately 90 days, is perhaps the largest oil container in the world and has a capacity of 4,083,000 bbls. It is 1,375 feet in length, 498 feet in width and has a depth in the center of 42 feet.

There are no other reservoirs in the immediate vicinity which might boil over and ignite this big container but it is in itself a rather severe menace inasmuch as it is nearly four times larger than any of the reservoirs lost by the Union at its two tank farms last week. There is no known method at present to extinguish an oil reservoir fire but recent experiments seem to indicate that some relief has been found.

Dominguez and Other Fields

The Union and Shell companies, principal operators at Dominguez, have not undertaken any general drilling campaign in that field but they have started several new wells during the past few months and the former is at present working on four drilling projects and the latter on five. This development work will result in completions from time to time and for this reason it is not believed that the present daily field production of approximately 20,000 bbls. will drop much below that figure.

With the exception of the drilling being done by the Union and Barnsdall, there is comparatively little work going on at Rosecrans, although the General Petroleum has undertaken to complete Walter H. Fisher's former No. 15 Athens. This well, which was acquired when the company bought Fisher's properties and equipment will probably be given a test some time within the next few weeks.

The Associated is scheduled to make a production test some time within the next few weeks on No. 2 Wanka, now at 4,800 feet, but nothing big is anticipated.

The Chanslor-Canfield Midway Oil Co. finished another 100-bbl. pumper at Torrance when No. 29 Del Amo was put on the beam at 3,660 feet and, inasmuch as the company is now only running three strings of tools, completions in the future will be somewhat more infrequent. The Shell Oil Co.'s No. 10 Redondo, drilled to 3,590 feet and finished with a 6¼-inch oil string, carrying 683 feet of shop perforated, was good for 96 bbls. of 16.1 gravity oil which showed a cut of 5 per cent. No. 9 on this property is rotating ahead at 2,890 feet and will probably come into production some time within the next 30 days. The two latest spuds in this field, No. 2 Craven of the R. & D. Oil Co. and No. 1 Hogan of the Petroleum Securities, are down 2,100 feet and 2,640 feet respectively.

To Drill Near Ocean

The Stanard Oil Co. is contemplating abandoning No. 1 Newland in the Huntington Beach Field at 4,237 feet because of the rather unsatisfactory outlook and, while it has not been absolutely decided to pull out, drilling has at least been suspended. The Union Oil Co. originally held this property under lease but quitclaimed it after drilling two deep wells which produced a little heavy oil and considerable water. The Standard Oil Co. immediately leased the property and in view of the fact that a cash bonus was involved, it is quite possible that the company will either resume work in its present hole and carry it on down for a conclusive test or start another shallow well. There was one recompletion listed during the week. This was No. 5 Jones Community of the Standard Oil Co., cleaned out to bottom, 2,835 feet, and returned to production pumping 208 bbls. of 16.9 gravity oil daily.

The electorate of Huntington Beach has decreed by a vote of more than two to one that it is advisable to lift the restrictions on an area six blocks square along the ocean front and the city council will accordingly take the necessary action at its next meeting some 10 days hence. It is thought that about 10 wells will be started within a short time after permission is granted to go ahead with work. Nothing definite is known of the potentiality of this new extension as there are no producers close enough to throw any light on the situation but several well-informed operators look for fairly large production in view of the fact that the nearest wells to the property are flowing under a good gas pressure.

Rideout Heights

No. 1 Broderick of the Pan American at Rideout Heights is rotating ahead at 2,600 feet but No. 1 Heights of the Petroleum Securities is only down 665 feet. Both wells ran into conglomerate around the 600-foot level and, although No. 1 Broderick passed out of it, No. 1 Heights is still being held up because of the exceptionally hard formation. The South Slope Oil Co., under the direction of Jim

(Continued on Page 102)

Tanker Shipments From Los Angeles to Atlantic and Gulf Coast Ports

Commodity—	Total This Week	Daily Average	Total Last Week	Daily Average	This Year To Date	Same Time Last Year
Crude oil	310,129	44,304	388,895	55,556	3,429,816	5,180,943
Fuel and gas oil	215,265	30,752	163,584	23,369	2,700,909	237,373
Gasoline	91,597	13,085	151,805	21,686	1,825,194	1,215,271
Tops	.....	.....	.....	.....	74,619	80,578
Coastwise—						
Crude oil	429,225	61,318	239,598	34,228	6,382,703	8,034,618
Fuel and gas oil	242,228	34,604	220,457	31,494	2,476,966	3,856,123
Gasoline	104,657	14,951	269,615	29,945	2,061,917	1,426,256
Kerosene	7,688	1,098	3,611	516	97,595	70,506
Tops	21,018	3,003	.....	.....	2,210,044	62,970
Exports—						
Crude oil	45,118	6,445	.....	.....	862,668	697,143
Fuel and gas oil	424,616	60,659	418,636	59,805	4,692,449	3,700,479
Gasoline	74,809	10,687	164,097	23,442	999,775	1,082,048
Tops	.....	.....	.....	.....	.....	89,932
Kerosene	131,766	18,824	9,128	1,304	619,007	445,607
Tanker Shipments From San Francisco to Atlantic and Gulf Coast Ports						
Fuel and gas oil	90,643	12,949	.....	.....	285,666	.....
Gasoline	.....	.....	.....	.....	341,606	332,906
Tops	.....	.....	73,598	10,523	73,698	387,629
Lubricants	.....	.....	72,063	10,295	154,088	81,939
Coastwise—						
Fuel and gas oil	113,203	16,172	62,074	8,868	1,089,926	831,252
Gasoline	28,416	4,059	158,588	22,655	1,077,031	717,147
Kerosene	.....	.....	22,328	3,190	126,363	83,156
Exports—						
Fuel and gas oil	78,196	11,171	71,909	10,273	894,409	415,399
Gasoline	87,307	12,472	30,152	4,307	441,782	147,410
Kerosene	4,090	584	67,811	9,687	429,049	217,765
Lubricants	.....	.....	.....	.....	.....	243,602

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TABLE
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Clarke Pool Is Tennessee Attraction

Over 3,200 Bbls. of 40 Gravity Oil at Present in Storage in that District and Operators Are Looking for An Outlet

By Vern T. Whitney
Staff Correspondent, Kentucky-Tennessee

GLASGOW, Ky., Apr. 19.—The eyes of the oil industry in Kentucky and Tennessee are now focussed on the new pool opened up by H. Z. Clarke and associates several miles east of Celina, in Clay County, Tennessee. This pool, known as the Clarke Pool, is in a horseshoe bend of the Obey River, 13 miles northeast of the production in Tinsley Bottom and about 7 miles southwest of the Kettle Creek Pool. The first well, No. 1 J. M. Grey, 1½ miles east of Celina, was brought in shortly after the opening of the New Year, with a flush production estimated all the way from 500 to 1,000 bbls. from the shallow depth of 302 feet. Since then the Thurman farm test drilled by Clarke and others, adjoining the Grey to the east, came in with an initial yield of 500 bbls. in a sand picked up at 334½ feet. No. 1 Stone heirs, north of the Thurman, is estimated good for 50 bbls. at 446 feet, and No. 1 James Arms, west of the Stone heirs and north of the discovery Grey well, showed 60 bbls. at 416 feet. The Grey and Thurman tests were finished in a sand lying between the Green Shale and the Pencil Cave which is from 25 to 30 feet below the base of the second Sunnybrook sand. The Stone heirs and Arms wells were drilled to the sand beneath the Pencil Cave as the stray sand found in the first two wells was absent.

Recently Dixon, Bayless and Douglass, drilled in two producing wells on the A. T. Davis farm, extending the pool to the south. The first, located 7 locations south of the Grey, is estimated at 25 bbls. at 502 feet, immediately below the Pencil Cave and the second, 800 feet east of No. 1, is rated at 40 bbls. from the pay below the Pencil Cave at a total depth of 496 feet.

At the present over 3,200 bbls. of 40 gravity oil is in storage tanks which has been produced from the wells in the new Clarke Pool, and the operators are now looking for an outlet for their crude. It is possible that the Paragon Refining Co. of Toledo, Ohio, operating in the Kentucky fields under the name of the Paragon Development Co., will extend its gathering system from Kettle Creek, 7 miles away, to offer a market for this crude. M. G. Norton and H. H. Harpst, of the Paragon Co., are now making a test of these new Tennessee wells and their decision as to the building of the line is being awaited with much interest. If the Paragon does decide to purchase this oil it will pay the Somerset light prices, less a carrying charge of 25 cents until the line has paid for itself.

Drilling Going Forward

That the operators in the Clarke district are of the opinion that a new pool of considerable extent has been opened is evidenced by the way new work is being started.

H. Z. Clarke and associates are rigging up to drill No. 2 J. M. Grey, 400 feet south of No. 1; Dixon, Bayless & Douglass are drilling No. 3 A. T. Davis, 400 feet south of No. 1; Miller Brothers, of West Virginia, are commencing a test on the Lanford place, 3 miles south of Celina and 2 miles southwest of the Clarke Pool; Mendenthal Brothers, of Chanute, Kans., are spudding No. 1 Potter, 6 miles northwest of Celina on Turkey Creek; John B. Kerr, San Francisco, is drilling on the George Plumley farm just across the Cumberland River from Old Celina; Lewis & George of Steubenville, Ohio, have made a location for a test on the George Tinsley tract, northeast of the Clark wells; unknown parties are rigging to drill on the W. J. Nebbings, close-by the Tinsley venture; Foster Mitchell, of Tulsa, Okla., is drilling No. 1 Kerr, 4 miles northeast of the Clarke Pool, on Pea Ridge.

Flowing Well at Willow Grove

The Carnahan Oil Co.'s No. 1 Petway Dennis, 2 miles south of Willow Grove, in Clay County, Tennessee, is showing for a good producer at 725 feet, 144 feet below the Pencil Cave, where the oil flowed over the top of the mast. This is an important completion as it is in an entirely new district. The same company is now drilling No. 1 Widow Hargrave, an offset farm to the Dennis.

The latest completion in the Tinsley Bottom Pool, in Clay and Jackson Counties, Tennessee, is No. 8 Hamp Lynn, drilled by Dafoe and associates, good for from 8 to 10 bbls. on the pump at a depth of 431 feet, 144 feet below the Pencil Cave.

Other Tennessee News

The A. H. Heisey & Co.'s test on the Robbins farm, 4 miles north of Livingston, in Overton County, Tennessee, is reported to be standing 1,100 feet in oil. The well was drilled to a depth of 2,027 feet, but was plugged back to an oil showing at 1,925 feet where it was treated to a 160-quart shot of nitro in January. The hole is now being cleaned out and will possibly be put on the pumping jack and tested.

Barker, Smith and others of Clarksburg, W. Va., are cleaning out their No. 1 Gauldin, near Trimble in Dyer County, so as to make a test of a showing found at 1,305 feet. This test had a heavy gas pressure at that depth which blew out several times before it could be gotten under control. At 1,290 feet pyrites of iron was encountered with a thickness of 8 feet. This is thought to have been at the bottom of the Porter's Creek formation and that the gas is coming from the top of the Ripley which underlies the Porter's Creek. The Ripley is a marine formation and belongs to the Upper Cretaceous.

Week's Work

A summary of the week's work in the Kentucky-Tennessee fields shows 23 completions, 18 producers with a flush of 967 bbls., and 5 dry holes. Compared with the previous week, this is an increase of 4 completions, 3 producing wells, 450 bbls. more production, and 1 more dry hole. These wells were distributed by counties and districts as follows:

	Comp.	Wells	Prod.	Dry
Barren	5	3	43	2
Owensboro	4	3	70	1
Allen	4	3	4	1
Cumberland-Monroe	2	1	5	1
Wolfe	1	1	10	0
Clay, County, Tenn.	7	7	835	0
Total	23	18	967	5
Last week	19	15	517	4
Difference	4	3	450	1

Hook Up New Pool

When the Paragon Development Co., subsidiary of the Paragon Refining Co., of Toledo, Ohio, hooks up the south end of its Glasgow-Kettle Creek, Kentucky, pipe line with a southern extension of 7 miles to the Clarke Pool, in Clay County, Tennessee, it will mean a large increase in that line's crude oil handling as the pool looks like a rich one. The finding of a pay sand of a stray nature between the Green shale and the Pencil Cave, is something out of the ordinary, it is called a stray sand, but it might be the St. Peter, says an old-time operator who has done a vast amount of drilling both in the Trenton Rock Field of Ohio-Indiana and the Sunnybrook formations of Kentucky, which are considered to be the Trenton Rock, but thins out to the southward.

This stray sand may have been passed through in other wells drilled in parts of Tennessee but may not have contained oil, therefore, its discovery is new to the trade. A joint of perforated pipe and packer is used to shut off the water to get this stray sand production which is usually large. It is reported that the No. 1 Grey farm after producing a large amount of crude, will remain close to its initial production, which indicates that the stray sand has a vast amount of crude to draw from.

Kentucky Oil Runs

During the month of March, 426,718.48 bbls. of crude oil were run through the major pipe lines, making their reports, in Kentucky. The eastern division led with a total run of 312,653.64 bbls. This crude was purchased by the Cumberland Pipe Line Corp. and run as follows: Week ending March 6, 59,886.93 bbls.; week ending March 13, 64,943.58 bbls.; week ending March 20, 58,317.67 bbls.; week ending March 27, 66,295.83 bbls.; week ending April 3, 63,209.63 bbls.

Pipe line runs during the month of March in the western division amounted to 114,064.84 bbls., a gain of 8,215.83 bbls., compared with February figures. The runs were distributed by counties and districts as follows:

	Runs	Increase	Dec.
Warren	37,143.83	2,249.01	.....
Barren	23,345.29	1,575.90	.....
Owensboro Dis.	24,907.39	2,065.57	.....
Allen	21,050.61	1,992.46	.....
Cumberland-Monroe	5,324.55	.....	119.25
Hopkins	1,086.66	.....	15.02
Clinton	378.74	33.71	.....
Simpson	761.11	318.69	.....
Logan	66.16	.50	.....
March runs	114,064.84	8,215.83	134.47
February runs	105,983.48	.....	.....
Difference	8,081.36	.....	.....

Eastern Division

In the Big Sandy section of eastern Kentucky, both the North and South Weir Fields of Lawrence-Johnson-Magoffin Counties are not showing the completions they should for such valuable territory, but the lack of completions is due greatly to the bad weather that has prevailed in the hills for two or three months. About the same conditions prevail in Lee, Owsley, Estill, Wolfe, Wayne and other counties of the eastern division.

Only one completion was reported from the eastern portion during the week, the Petroleum Exploration Co.'s No. 12 on the Miller-Pruitt-Godd lease in Wolfe County, with a production of 10 bbls. The completion of this well on the big 600-acre lease and the drilling deeper of old No. 373 on the Wolfe heirs' lease, in the Lecco Field, with 7 bbls. may add much toward production in that field. The old No. 373 was originally drilled to the first pay sand and making a good showing, was put on the pump. Several years have elapsed, says the Trico News, since the well was drilled and the production fell off to a large extent. Recently it was decided to ascertain the results of going down to the second pay sand and accordingly the well was drilled deeper and is now making 7 bbls. of crude daily. There are a number of favorable locations in the vicinity of No. 12 well which may be drilled at a future date.

Western Division

The outstanding feature of the week in the western division is the completion of wells out of the ordinary in production in both the Barren and Owensboro Fields, that materially increase the production of the division to a great extent.

Barren County

The best completion from the Glasgow Field, in Barren County, 3 miles east of Glasgow, is what is called the Lecta Pool, was made by the Esslinger

(Continued on Page 122)

ROUNDHEAD POOL, LOGAN COUNTY, O., SHARES INTEREST WITH MICHIGAN

By Whit
Staff Correspondent, Central West Fields

FINDLAY, Ohio., Apr. 19.—Drilling activities in the division of the Central West Field north of the Ohio River have been somewhat suspended because of the inclement weather during the past few weeks, although extensive preparations are being made for a heavy drilling campaign this spring and summer. Operators are now turning their attention to Michigan, especially to the Saginaw Field, which will be fully developed by lease owners in the vicinity of the city of Saginaw and north toward Bay City. Other spots in Michigan are being carefully looked over and extensive leasing is going on. Monroe County, in the southeastern portion of the state, is also coming in for a leasing campaign. Already seven locations are staked out on structures covering an area of several miles northeast and southwest and pronounced as likely productive territory from either the Dundee or Trenton sands. Production has already been found near Petersburg in the western part of Monroe County, and while not a large producer, it shows that several wells of the same size would prove commercial production where hooked to one central power pumping plant. A week or so ago a showing of oil was found at a shallow depth, approximately 5 miles west of Port Huron, in St. Clair County, but the most attractive spot is centered to the north of Saginaw, where six producers of commercial size have been the result. The field is nearly a mile square covered by the six wells and means many locations that look sure for production. The oil comes from the Berea sand and brings Pennsylvania prices, which is a big help to the operator. The wells vary in depth from 1,812 to 1,850 feet. There is one feature about the Saginaw Field, and that is that as far as work has been done the production secured from the field would not in any way affect the market price of crude. The six tests show that the field, if properly developed, would result perhaps in a great deal of activity and much wildcatting in that portion of the Wolverine State.

Lima Field

Nine completions were reported from the old Lima Field of northwestern Ohio during the week with a flush production of 126 bbls.

Word comes from Belle Center, in the north central portion of Logan County, east of the Lewiston Reservoir and southeast from the Roundhead Field of Hardin County, that G. L. Schumacher and others have a light showing of both oil and gas in a wildcat venture on the Mack farm.

(Continued on Page 116)

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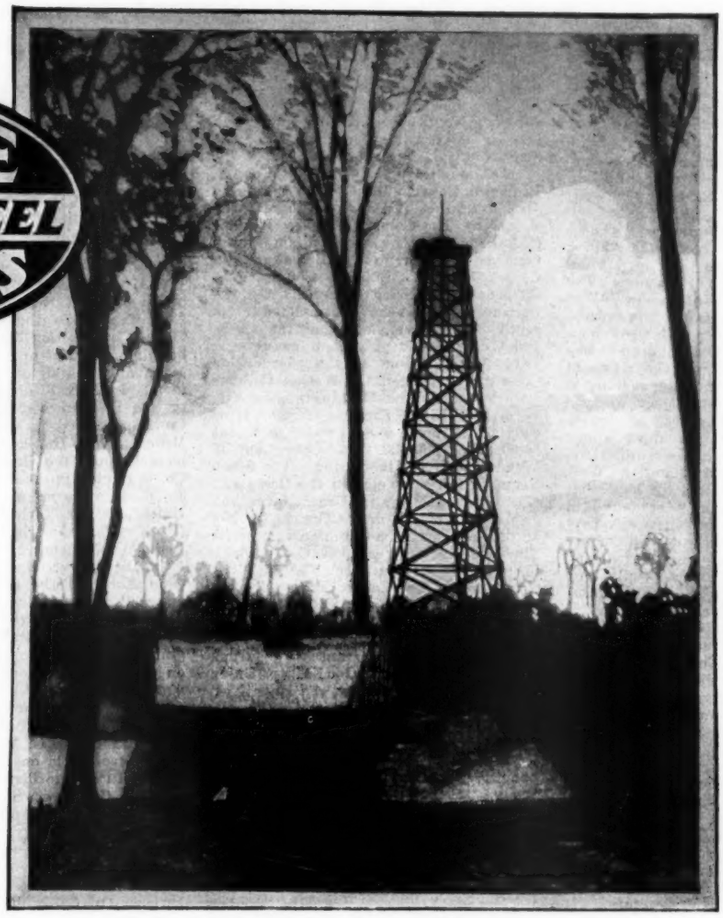

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Drilling Deeper in the Eastern Fields

Operations Take That Form Rather Than Seek New Production. Marshall and Harrison Counties, W. Va., Active

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Apr. 19.—The almost total absence of good producers in the completed list was a feature of development work during the past week. In all fields fewer wells were completed, southeastern Ohio falling to a lower place than in a number of weeks. The gas areas in West Virginia completed fewer wells and the result showed a general slowing up. One hindrance was the heavy rain which put the roads in the most deplorable condition, making it next to impossible to start new work.

Drilling down old wells, no longer productive in some of the upper sands, is quite a feature in some districts, Marshall and Harrison Counties, West Virginia. There is always the hope that some new production may be found in some of the lower formations. Very few wells are now abandoned before drilling through all the known producing formations. Searching for strictly new producing territory has for the present been almost entirely abandoned.

Fair Producer in Clay County

In the Big Injun sand development in Henry district, Clay County, West Virginia, the Ohio Fuel Oil Co.'s No. 8 on the J. B. Casto 220 acres, has just been drilled through the sand and estimated to be good for 75 bbls. a day. The location is 600 feet south of No. 6 on the same tract. On Porters Creek, Union district, the Empire Petroleum Co. has completed in the Big Injun sand a second test on the Ellen Cogar farm. It is a gasser good for 150,000 feet.

On Meadow run of Goose Creek, Grant district, Ritchie County, the South Penn Oil Co. completed in the Big Injun sand No. 3 on the Clyde Atkinson farm. It is a natural producer good for 30 bbls. a day. In Union district, Tyler County, the Kotzebue Oil Co. drilled a second test on the G. W. Kotzebue farm through the Big Injun sand good for 2 bbls. a day.

Dry in the Gordon

After a long delay the Wiser Oil Co. has succeeded in drilling its test on the John Mason farm through the Gordon sand to a total depth of 3,159 feet. It is dry and will be abandoned. In Church district, J. B. Ornduff & Co.'s No. 3 on the Emma Kirkhart farm is a gasser in the Gordon sand. In the same district, the Round Bottom Oil & Gas Co.'s test on the Lewis heirs farm is a gasser in the Big Injun sand.

Marshall County

In Liberty district, Marshall County, the Hope Construction & Refining Co.'s No. 5 on the J. G. Logsdon farm is good for 5 bbls. a day in the Gordon sand. In the same district, the Decem Development Co. has a 5-bbl. pumper in the same formation at No. 6 on the Robert M. Bonar farm. In the same district, Burley & Ornduff's test on the Franklin heirs' farm is a light gasser in the Gordon sand.

Roane County

In Curtis district, Roane County, the Ohio Fuel Oil Co. has completed in the Cow Run sand No. 7 on the W. A. Burdett farm good for 5 bbls. a day. In Geary district the United Fuel Gas Co.'s test on the G. W. White & Co.'s farm is a gasser in the Big Injun sand. In Washington district, Calhoun County, Norris & Cain's No. 5 on the Nancy Jarvis farm, is a gasser in the salt sand.

Fair Producer in Doddridge

In Central district, Doddridge County, May & Kinter have completed in the Big Injun sand No. 3 on the C. F. Williams farm and good for 35 bbls. a day In the same district, the Philadelphia Oil Co.'s No. 9 on the W. A. Duckworth farm is a natural producer in the same formation good for 10 bbls. a day.

In Union district, Ritchie County, Braden & Co. completed in the Big Injun sand a test on the Joseph Moore farm, a duster. The Columbia Gas & Electric Co.'s second test on the William Powell farm is a gasser in the Berea grit, in Carroll district, Lincoln County. In Barboursville district, Cabell County Ortman & Shipe have completed at a depth of 3,325 feet, a test on the M. E and C. Merritt farm, a light gasser.

In West Union district, Doddridge County, the Clifton Oil & Gas Co. has drilled through the Big Injun sand No 12 on the Flora Freeman farm. It is good for 2 bbls. a day and has a gas capacity of 300,000 feet. Operations in Wood County are increasing. The South Penn Oil Co. completed in the Berea grit No. 17 on the Susan Grant farm and good for 15 bbls. a day. The rig for No. 18 on the same farm has been completed. The Cogden-Woodyard Oil Co. is drilling at 500 feet on the No. 10 Elgie Grant farm. The Coplan Farm Oil Co.'s second test on the J. W. Coplan farm is drilling at 1,400 feet. In Union district, the South Penn Oil Co. has started to drill No. 4 on the Grant heirs' farm.

Three miles west of Good Hope, Union district, Harrison County, the Hope Natural Gas Co. has drilled its test on the J. W. Somerville farm down to and through the Speechley sand, to a total depth of 3,148 feet. It will make a light pumper, good for probably 2 or 3 bbls. a day.

Putnam County

On Poplar Ford, Scott district, Putnam County, the Teays Producing Co. has completed and shot a second test on the Fannie J. Simms farm and good for 8 bbls. a day. On Spring Branch, 1 mile northeast of the last named well, the same company has started to drill on the S. Eggleton farm.

Gassers in Lincoln County

In Carroll district, Lincoln County, A. F. Norris has completed No. 3 on his own farm. It is a gasser of the average size in the Berea grit. In the same district the Ray Gas Co. is due in the same formation at a test on the T. H. and W. R. Lockwood farm. In Union district, the Cambridge Gas Co. has a Berea grit gasser good for 750,000 feet at a test on the Acey McCallister farm. In Jefferson district, the Bear Branch Gas Co. is due in the Berea grit at No. 3 on the Spencer Hill farm. In Washington district, Boone County, the Owens Bottle & Machine Co. has a light gasser in the Big Injun sand at No. 3 on the Little Land & Coal Co.'s property.

Ritchie County

In Union district, Ritchie County, the Carnegie Natural Gas Co. has now drilled its test on the Martha Batson farm through the Gordon sand and dry in all formations. The same company is due in the Big Injun sand at a second test on the Smith heirs' farm. The Hope Natural Gas Co.'s test on the Lee Fleshner farm is a gasser in the Big Injun sand.

In Murphy district, F. H. Davis & Co. are drilling a test on the A. W. Flesher farm. The Hope Natural Gas Co. is due in the Big Injun sand on the William Martin farm. S. A. Powell & Co. are drilling a second test on the Kennedy heirs' farm. In Grant district, the Hope Construction & Refining Co. has a rig up on the B. F. Phillips farm. The Penn Royal Oil Co. is due in the sand at No. 5 on the C. Lowther farm.

On Gillespie run, T. A. and E. P. Mellon completed No. 6 on the Conaway-Patton farm and have a gasser good for 500,000 feet in the salt sand. In Union district, Pleasants County, the Big Bend Oil Co.'s test on the McCoy heirs farm is a duster in the Big Injun sand.

Starting Test Wells

In Liberty district, Marshall County, the Manufacturers Light & Heat Co. is building the rig for a test on the Sanford Huggins farm. In the same district, the Decem Development Co. is rigging to drill deeper old No. 1 on the Robert Bonar farm. In Center district, Wetzel County, the Myers Oil & Gas Co. is due in the Gordon sand on the J. K. Long farm. In the same district, the Hope Construction & Refining Co. is building the rig to drill to the lower sands an old well on the Daniel Kuhns farm. In DeKalb district, Gilmer County, the Pittsburgh & West Virginia Gas Co. has started to drill on the W. V. Miller farm. In Sheridan district, Calhoun County, the Grantsville Oil & Gas Co. is rigging up at a second test on the J. B. Dye farm to drill deeper. In Union district, Tyler County, Morgan Brothers have a rig completed on the Belle Wiles farm.

In Reedy district, Roane County, the Ohio Fuel Oil Co. has part of the rig material at a location on the J. M. Seaman farm. In Battelle district, Monongalia County, the Pittsburgh & West Virginia Gas Co. is due in the Gordon sand on the Perry Kennedy farm. In Union district, Marshall County, the Spider Oil & Gas Co. is rigging up on the Anna Jochum farm. In Union district, Pleasants County, L. C. White is fishing for a string of tools on the E. L. Newland farm. In Meade district, Tyler County, Neely & Co. have started to drill on the R. A. Morgan heirs farm. In Grant district, Ritchie County, the Hope Natural Gas Co. has started to drill on the T. F. Crofton.

In Union district, Tyler County, the Swisher Oil Co. is due in the Big Injun sand at a test on the G. W. Kotzebue farm. In Elk district, Harrison County, the Hope Natural Gas Co. has made a location on the Lucy McAndrews farm. In the same district, the Grasselli Chemical Co. is due in the Big Injun sand on the O. B. Thornberry farm. In Freeman's Creek district, Lewis County, the Hope Construction & Refining Co. is due in the Gordon sand on the Benjamin Riffee farm. In Sardis district, Harrison County, Hoffmire & Deegan have started to drill on the W. A. Rogers farm. In Ten-Mile district, Burke & Lyons have a rig completed on the M. T. Williams farm.

In McKim district, Pleasants County, the Delong Farm Oil & Gas Co. has moved a drilling machine to a location on the C. C. Delong farm. In the same district, Adam Ward has made the location and moving in a drilling machine for No. 12 on the G. W. Varner farm. In Jefferson district, the Bailey Gas Co. has moved a drilling machine to the location for No. 6 on the H. S. and J. E. Ambler farm. On Fink Creek, Freemans Creek district, Lewis County, the Philadelphia Oil Co. has the rig completed for a second test on the L. C. Waugh farm.

Southeastern Ohio

In the southwest quarter of Section 17, Prairie Township, Holmes County, the East Ohio Gas Co. has completed and shot in the Clinton sand No. 4 on the L. A. Sowash farm and produced 75 bbls. the first 24 hours. In Section 9, Licking Township, Muskingum County, the Pure Oil Co. completed and shot in the same formation No. 3 on the C. H. Wright farm. It swabbed 30 bbls. the first 24 hours.

The Graystone Oil Co. has completed and shot in the Clinton sand No. 4 on the George Miller heirs farm and produced 25 bbls. the first 24 hours. It is in the northeast quarter of Section 11, Washington Township, Hocking County. The location is 600 feet south of No. 2 on the same farm.

Light Shallow Sander

In the northwest quarter of Section 19, Enoch Township, Noble County, Albert Sheets & Co. completed in the Buell Run sand No. 9 on the Theodore Scheetz farm; it is a very light pumper, probably less than a barrel a day. In Section 5, Washington Township, Monroe County, the Antioch Producing Co. has a light pumper in the Berea grit at No. 3 on the Amos Cronin farm. In Section 3, Falls Township, Hocking County, Kelch Brothers are due in the Clinton sand at a test on the Jacob Schneider farm.

In Section 13, Hanover Township, Licking County, the Edward H. Everett Co. has completed and shot in the Clinton sand a test on the Mary F. Wilhelm farm. It produced 55 bbls. the ensuing 24 hours. In the Fisher Pool, Section 29, Alexander Township, Athens County, the Biddle Oil & Gas Co.'s second test on the John F. Biddle heirs farm produced 20 bbls. the first 24 hours after drilled through and shot in the Berea grit.

Gasser in Licking County

In the southwest quarter of Section 14, Fallsbury Township, Licking County, the Leonard Oil & Gas Co. has a gasser in the Clinton sand good for 1,500,000 feet at a test on the Dora Myers farm. In the northeast corner of Section 2, Clark Township, Coshocton County, the East Ohio Oil & Gas Co.'s second test on the John Conkle farm is a duster in the Clinton sand. In the southwest quarter of Section 8, Greene Township, Monroe County, David Crawford and others completed a test on the Elizabeth Jeffers farm, a duster in the Keener sand.

Light Pumper in Meigs County

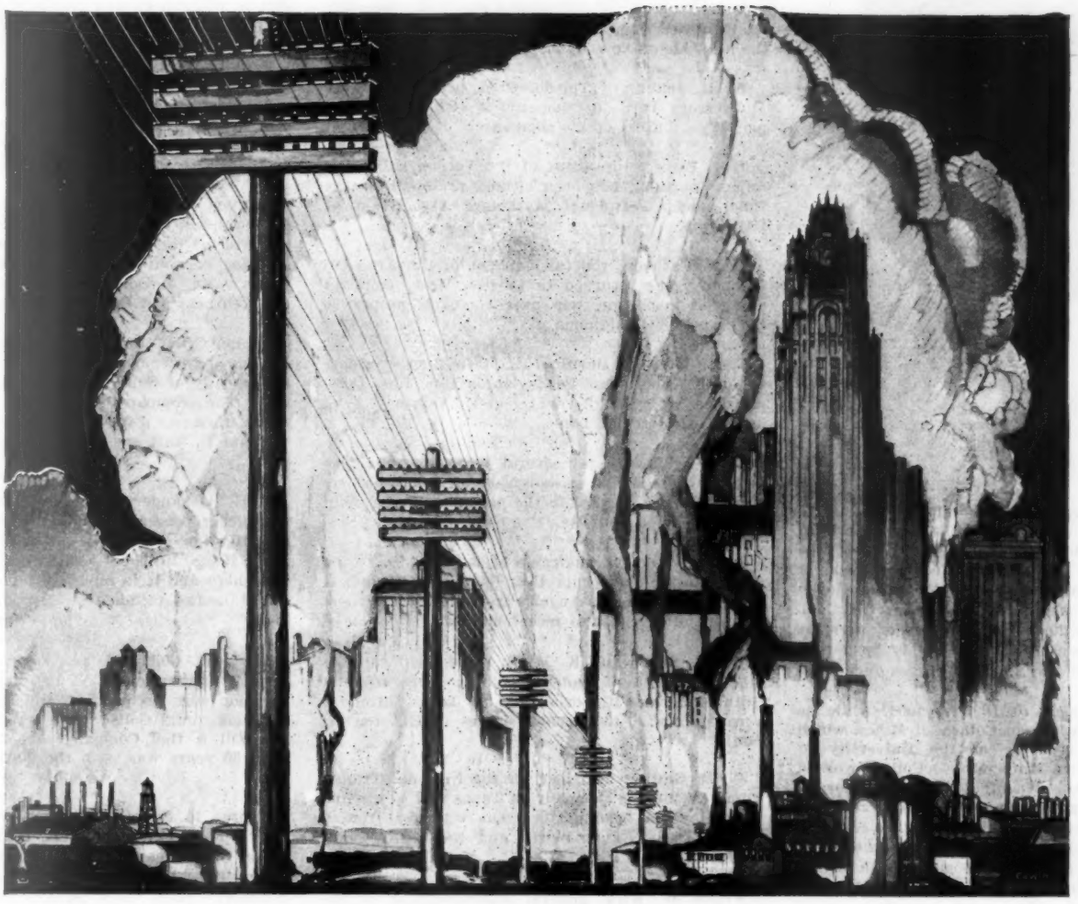
In the southwest quarter of Section 18, Sutton Township, Meigs County, Simon Lebow and others completed and shot in the Berea grit another test on the Charles and Frances Holter farm. It produced 10 bbls. the first 24 hours.

In Lot 24, Newton Township, Licking County, E. J. Edmonds & Co. have a producer in the Berea grit good for 8 bbls. a day, on the Ellen E. Forry farm. In Section 31, Enoch Township, Noble County, H. M. Moreland and others drilled No. 5 on the L. W. Moreland farm through the 700-foot sand and it is dry. About 20 feet of broken sand was drilled through and contained no gas and only a light show of oil. It will go into the discard.

In Section 29, York Township, Morgan County, the Sun Oil Co.'s No. 4 on the Joseph Longstreth farm is a 10-bbl. pumper in the Berea grit. The same company is drilling No. 17 on the C. E. Swytser farm. In Alexander Township, Athens County, the Townsend Oil & Gas Co. has a 5-bbl. pumper in the Berea grit at No. 8 on the Elizabeth Smoot farm. In Section 15, Grandview Township, Washington County, the Peoples Savings Bank completed No. 7 on the Louis McBride farm. It is good for 2 bbls. a day in the Keener sand and a light gas pressure in the Big Injun sand.

In the Berea grit development, Section 12, Monroe Township, Perry County, John Denman & Son drilled No. 19 on the Annie and Mary McGowan farm through the Berea grit showing very little oil. Unless it improves when shot it will be abandoned. In Section 19, York Township, Morgan County, the Arkansas Oil & Gas Co.'s No. 3 on the B. L. Stoneburner farm is a gasser in the Berea

(Continued on Page 124)



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MEN KNOWN IN OILDOM

Charles Rolfe McCollom

Charles Rolfe McCollom, chief geologist of the Union Oil Company of California and vice president of the American Association of Petroleum Geologists, became affiliated with the Union Oil Company in August, 1920, after 15 years of previous activity in his chosen field, broken only by a two-year connection with the American forces during the late war.

During the summers of 1899 to 1904, while he was attending the Michigan College of Mines, which he entered after studying at the University of Minnesota, his native state, Mr. McCollom worked in Wyoming, Idaho, Washington and California, gaining his first practical knowledge along railroad, mining and engineering lines. Graduating with the degree of Bachelor of Science and Engineer of Mines in 1905, he accepted a position as assistant geologist for the Calumet and Arizona Mining Company of Bisbee, Ariz. Two years later he engaged in exploration work in Mexico for the E. H. Harriman-John Hays Hammond Syndicate.

For 15 months he was overseas with the 107th, 113th and 116th Engineer Corps of the American Expeditionary Forces; and during 13 months of this time served on the general staff. His discharge as a major of engineers was granted in July, 1919.

Back in Los Angeles, he opened his own offices, and continued in private practice until entering the Union Oil fold in 1920. In October, 1921, he was appointed as assistant manager of the geological department of the Union Oil Company and made chief geologist on October 1, 1922.

Mr. McCollom keeps in touch with geological and military affairs by holding memberships in the American Association of Petroleum Geologists, American Institute of Mining and Metallurgical Engineers, Southern California Academy of Science, American Society of Military Engineers, American Legion, and is an officer d'Academie Avec Palms d'Argent.

It is interesting to note that the geological staff under direction of Mr. McCollom discovered five new fields—Dominguez, Rosecrans, Fort Collins in Colorado, Circle Ridge in Wyoming and Lake Creek in Wyoming.

PERSONAL PARAGRAPHS

J. M. Sickler of the Union Oil Company's geological staff has returned to Los Angeles from Dallas, Tex.

* * *

H. G. Trimble, manager of sales for the National Supply Company, Toledo, Ohio, is visiting the branches in Texas.

H. E. Froman of the Frick-Reid Supply Company in Wyoming has been transferred to the Tulsa offices of the company.

* * *

John D. Beardsley of Findlay, Ohio, traveling auditor for the Ohio Oil Company, is spending a few days in Wyoming.

* * *

L. M. Kiplinger of the Illinois Pipe Line Company has returned to Casper, Wyo., from a trip through the oil fields of New Mexico.

* * *

W. H. Jeffery of Toledo, Ohio, president of the Midwestern Torpedo Company, is visiting the Casper, Wyo., offices of his company.

* * *

J. A. Brower, president of the Vernon Oil & Refining Company, has been elected president of the Independent Petroleum Marketers Association of California.

* * *

M. T. Rathvon, general manager of the Argo Oil Company, has returned to Casper, Wyo., from an extended inspection trip over company properties in Texas and Oklahoma.

* * *

T. M. Magee of Bovaird, Pa., retired superintendent of the Southwest Pennsylvania Pipe Line Company, having spent the winter at Hot Springs, Ark., has returned to his home.

* * *

Laten Stanberry, for several years deputy supervisor of the oil and gas division of Texas has resigned to accept a post in the producing department of the Houston Gulf Gas Company at Houston.

* * *

Jacques Vinmont, chairman of the executitve committee of the California Petroleum Corporation, is expected back in Los Angeles from New York where he went in response to recent merger discussions.

* * *

W. W. Baker and K. M. Haggard, field superintendents for the Rycade Petroleum Corporation at Orange and in Brazoria County, Texas, attended a conference at the general offices in Houston recently.

* * *

W. H. Gaither, manager for the National Transit Pump & Machine Company in Texas and Louisiana, with Houston headquarters, has returned from a trip to Dallas, Fort Worth and the north Texas fields.

* * *

Frank W. Kirk, general superintendent of the Houston Pipe Line Company, a natural gas subsidiary of the Houston Oil Company, Houston headquarters, is on a business trip to the pipe mills in the Pittsburgh, Pa., district.

* * *

R. U. Walters has joined the engineering department of the Humphreys Corporation at Houston, Tex. He was formerly with the Humble Oil & Refining Company at its Baytown refinery as structural draftsman.

* * *

Roderick Burnham, manager of lands of the Union Oil Company, has just left for New York where he will take ship for London. Mr. Burnham is bent on pleasure in an effort to regain his health following a recent illness.

* * *

R. E. Wertz, vice president and general superintendent of operations for the Producers & Refiners Corporation, and Clyde Parrish, head of the pipe line department for the same company, spent several days in Casper, Wyo., recently.

* * *

Dr. and Mrs. George N. Fry have returned to their home in Oil City, Pa., after a visit with their son, Harold Fry, who has charge of development work for the Standard Oil Company of Venezuela in eastern Venezuela and who is located at Maturin, Venezuela.

* * *

Herbert Ligon of Wichita Falls and Perry Watson of El Dorado, Ark., managers of warehouses for the W-K-M Company in those fields, were recent visitors at the Houston general offices of the company. L. O. Keon, vice president of the W-K-M Company, is in California.

* * *

J. M. Dullahan has been appointed purchasing agent for the Texon Oil & Land Company at Santa Rita, Reagan County, Texas, in the Big Lake Field. Mr. Dullahan has been identified with operations in the coastal fields for many years and has an extensive acquaintance among oil men.

* * *

Richard R. Harris, general sales manager for the Pittsburgh Steel Company, is in Houston, Tex., to arrange for warehouse facilities for a distributing plant. The company is erecting a steel pipe mill in Pittsburgh, and proposes shipping by water to Houston and thence inland by rail.

* * *

Paul L. Hart of Chicago, joint owner with T. C. Cooke in the No. 1 Todd in Crockett County, the well which discovered a pool and which has been sold to The Texas Company, is in San Antonio at the Gunter Hotel where he expects to spend a month or so looking after his West Texas interests.

* * *

William McDonough of the Pellville territory, in the Owensboro, Ky., district, is making preparations to move his family to his old home in New Mexico, stopping en route to visit the Panhandle Field of Texas. Mr. McDonough has been connected with the Kentucky Oil Company for several years.

* * *

Phelps Crum, formerly vice president of Cosden & Company, is now associated withe J. E. Jarratt & Company of San Antonio in an executive capacity. The company owns the famous Catarina ranch, formerly owned by C. P. Taft, and on which William H. Taft spent some vacations while President.

* * *

J. H. Alexander, representing carbon black manufacturing concerns of Monroe, La., is making an investigation of the oil and gas fields of the San Juan Basin in New Mexico. This is his second trip there and it is reported a plant may be established in the vicinity of Farmington or Aztec, N. Mex.

* * *

Mack P. Colt, Jr., a student at Lawrenceville School, Lawrenceville, N. J., is spending his spring vacation with his parents, Mr. and Mrs. M. P. Colt of Lima. Mr. Colt, Sr., is president of the new Oko Oil & Gas Company and formerly for more than 30 years was with the National Supply Company.

* * *

George R. Simons, who has been superintendent of the Farmington, N. Mex., refinery of the Continental Oil Company, has been transferred to Wichita Falls, Tex., to be assistant superintendent of the company's plant there recently purchased from the Texhoma Oil & Gas Company. H. H. Kinnaird succeeds Simons at Farmington.

* * *

A. F. Denniston of Houston, Tex., attended the annual meeting of the field superintendents and lease men of the Magnolia Petroleum Company, held at Dallas. Mr. Denniston represents the company in the coastal region and is a pioneer in the industry, dating his entrance from the days of Pioneer and Petroleum Center on Oil Creek.

* * *

F. W. Robertson, purchasing agent for the Skelly Oil Company, Tulsa; E. R. Welsh, assistant secretary of the Tulsa Purchasing Agents Association, and E. F. McIntyre, manager of the International Petroleum Exposition, attended the weekly luncheon of the Houston Purchasing Agents Association. L. F. Boffey addressed the members.

* * *

E. A. Cook, purchasing agent of the Twin State Oil Company and Sun Oil Company, and vice president for the Oklahoma-Texas division of the National Association of Purchasing Agents, was elected president of the Purchasing Agents Association of Tulsa, succeeding Fred H. Robertson of the Skelly Oil Company. A. J. Edwards of the Oklahoma Power Company and Carl Good of the Barnsdall Companies, are first vice presidents.

* * *

Joseph M. Regan, president and general manager of the Regan Forge & Engine Company, San Pedro, Calif., accompanied by L. D. Hilton, in charge of the Houston offices, have returned from a trip to the Mexican fields. William Barr, general shop superintendent, remained in charge of the Houston office during the absence of Mr. Hilton. Both Mr. Regan and Mr. Barr have returned to California. Mr. Barr is well known in the Texas field, having been connected with the Hughes Tool Company for many years.

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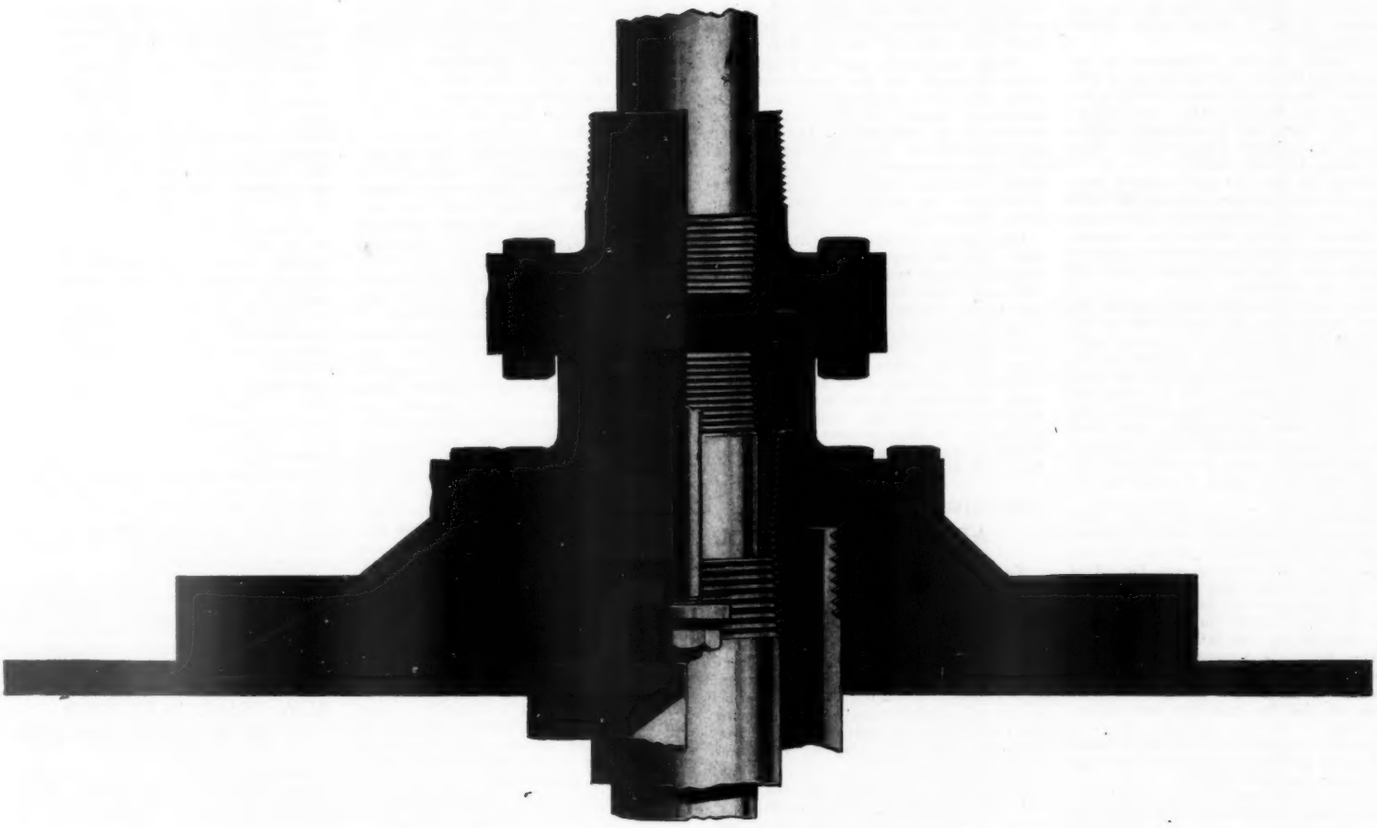

Lew D. Hilton, who is in charge of our Mid-Continent office at Houston, has had a wealth of experience in directing oil drilling production and has for many years been recognized as especially qualified on control work. His services or his advice are at your command without charge. Call on him.

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NATURAL GAS DEVELOPMENTS

EVERY HOUSTON BURNER MUST BE READJUSTED

HOUSTON, Tex., Apr. 17.—Whether the franchise with the Houston Gas & Fuel Co., which says burner adjustments must be made at the company's expense, means the company must spend $65,000 for "spud" air feeders that must be installed on every gas jet in Houston was the question referred to the city legal department by C. J. Kirk, public service commissioner.

A "spud" controls the amount of air that passes through the gas jet along with the gas. The average stove has six, a hot water heater 10 and many room heaters 10. They must all be changed because natural gas is hotter than artificial. They cost about 10 cents each.

When the city and gas company were trying to reach an agreement on the probable costs of operation with natural gas it was not known whether the company should pay for adjusting burners or should also pay for these new "spuds" that will have to be installed.

City experts, rather than to argue the point at the time, set up $95,000 for installation of spuds and for labor in making adjustments and set $30,000 as the cost of labor and adjustments without paying for the spuds. The question now is whether the people are going to pay for them or the gas company. Mr. Kirk says the people will have to pay anyway. If the company pays for them the city gives them three years to amortize the debt.

Industries have more jets than little consumers and Mr. Kirk thinks it is better to let each consumer pay for his own than to let the company pay for all of them in such a way that consumers would pay for them anyway in such a manner that the "little fellow" might be shouldering some of the "big fellow's" burden.

The legal department must decide whether this phrase in the franchise means the company must pay for the spuds or just for installing and adjusting them.

Another problem that Mr. Kirk thinks will occur will be in the finding of worn-out pieces that need repairs.

"I have a hot water heater that hasn't been touched in four years and when they go to install those spuds they will probably find a lot of wornout equipment," he said. "The trouble will be that a good many owners of stoves and heaters will think the adjusters broke the parts when they really fall to pieces from old age as soon as they are tampered with."

The Houston Gas & Fuel Co. has not accepted the city's rate of 65 cents per 1,000 feet plus a 50-cent service charge, but it is going ahead as if it expected to furnish natural gas at that price.

When natural gas does arrive every hot water heater must be cut off under city orders. It is dangerous unless proper precautions are taken, experts say. Heaters must be properly ventilated to the open air; these spuds must be installed and adjustments must be made. It will take about 15 days for the adjusters to get to every heater in Houston. Stoves will not have to be cut off. They can be used but they must be adjusted as soon as the inspectors are able to do so, the city orders.

ALBERTA TO REGULATE OIL AND GAS WELLS

CHATHAM, Ont., Apr. 17.—The Alberta provincial government has introduced in the legislature a bill providing for the regulation of oil and gas wells. Whether or not the transfer of natural resources from the Dominion to the province goes through, the new legislature will meet the stand taken by the Dominion Government that at present it can regulate oil and gas development on crown lands only, leaving the lands owned by the C. P. R., the Hudson's Bay Co. and lands homesteaded prior to 1887, in the anomalous position of being responsible to no government for regulations.

The new bill will formally correct this anomaly, although the big companies have been voluntarily conforming to the oil and gas regulations fixed for crown lands by the Dominion Government. If the natural resources are transferred to the province, the crown lands will also come under the terms of the new bill.

While regulations may be framed by order-in-council, the new legislation provides that they must be subject to a subsequent review at the next ensuing session of the legislature. The new act also provides for the establishment of a joint board composed of federal and provincial petroleum engineers to advise the government in regard to framing uniform regulations.

One clause provides that the government may fix regulations for equitable drawing of gas and oil from any particular area where the production is in excess of the market demands.

The regulations which the government is empowered to frame cover everything from drilling rules, proper tools and equipment, shutting off oil and water into their respective strata while drilling, keeping accurate logs, making reports, keeping of records, notices of intention to begin or abandon drilling, and every phase of drilling operations.

SOUTHWEST GAS MEN AT GAS METER SCHOOL

The Southwestern Gas Meter Short Course is being held at the University of Oklahoma, Norman, April 20, 21, 22 and 23. At least 250 gas men, including meter repair men, gas superintendents, gas engineers and representatives of large oil companies and industrial gas users, will attend this school. Gas companies of several southwestern states, covering the entire Mid-Continent Field, will participate, also representatives of meter manufacturers.

This school, although only two years old, has become the leading gas meter school of the southwest. Women of the industry have also been given a part on the program. A new feature of the course will be instruction and demonstration in measurement of gas in large volumes and at high and low pressure.

The committee in charge of the course is: G. B. Helmrich, professor of mechanical engineering, director of gas meter short course; J. H. Baxter, Oklahoma Gas & Electric Co., chairman of committee; Mr. Franks, Empire Companies, Bartlesville; E. A. Clark, Oklahoma Natural Gas Co., Tulsa; Eugene Metz, representative, American Meter Co., Kansas City, Mo.; B. P. Stockwell, gas engineer, Corporation Commission; E. F. McKay, manager, Oklahoma Utilities Association; R. F. Hinchey, manager, Okmulgee Gas Co.; D. C. Williams, vice president, Ponca City Gas Distributing Co.

GAS MAY COOL HOUSES AS WELL AS HEAT THEM

GALVESTON, Tex., Apr. 17.—That gas would soon be used to cool houses in the summer as well as heat them in the winter, was prophesied by Paul E. Nicholls, vice president and general manager of the Galveston Gas Co., president of the Southwestern Public Service Association, who declared, in delivering his annual address, that following a reconstruction in the rate structures of the gas companies, such an arrangement would soon be made which would care for the summer load, just as heating in cold weather cares for the winter load.

DEEP TEST FOR GAS NEAR KANE, PA., FAILS

OIL CITY, Pa., Apr. 17.—The United Natural Gas Co., which has been carrying on an important investigation into the possibilities of securing commercially profitable production of gas from depths below those commonly known to produce in western Pennsylvania has finally had to abandon its first hole, No. 3,700, located near Kane, because of drilling difficulties experienced at a depth of over 4,350 feet when all efforts failed to successfully fish out or drill part of a 10-inch bit, a 10-inch reamer and an 8-inch bailer, which had been lost in the hole at that depth.

Although apparently every possible precaution had been taken to guarantee the successful drilling of this well to its estimated depth of over 7,000 feet and practically an entire specially designed outfit was utilized, the before mentioned result only serves to point out what difficulties may be expected in attempting to further augment the more shallow supplies of gas from the deeper horizons.

The greatest depth reached in this first hole was 4,370 feet, with the only gas production encountered in the Clarendon sand, and vertical alignment tests taken of the hole in an effort to ascertain the possibility of sidetracking the lost tools showed the hole to be exceptionally straight, the greatest tested deviation from the vertical having been at the rate of three feet horizontally per 100 feet of depth. In view of so slight a deviation from the vertical no serious trouble was anticipated from a crooked hole at the deeper horizons. Some deep drilling wells, however, have been abandoned when the holes took courses too crooked to continue drilling, and some have been found to be slating at the rate of as much as 48 feet horizontally per 100 feet of depth.

Several fishing jobs were necessary before reaching the depth of 4,370 feet, the drilling crew having successfully fished out two 10-inch bits, lost by breaking of the stem, and on two other occasions having fished out the 10-inch bits when the bit pins sheared off.

In accordance with recent practice of gaining all possible geologic information at deep wells, accurate temperature tests which furnished some very interesting data were taken from the top to the bottom of the hole. The temperature at a depth of 100 feet was found to be 46 degrees Fahrenheit and it increased uniformly with the depth until at 4,350 feet in the hole the temperature recorded was 108.1 degrees Fahrenheit, which temperature although comparatively high is not so great as that encountered in many other deep wells so tested. Not only is such information of an interesting nature, but it is now beginning to have geologic significance in the oil and gas industry. Temperatures are important in determining structure and also in determining the exact point in the horizon at which production enters the hole.

The gas company, however, although handicapped by the loss of the hole and practically eight months' lost time, contemplates tearing down and again rebuilding the rig a short distance from the first hole and again commencing drilling operations in an effort to reach the deep Medina formations which have been found productive in other localities.

LAREDO GAS SUPERVISOR

AUSTIN, Tex., Apr. 17.—Leslie McKay has been appointed deputy supervisor of the oil and gas division of the State Railroad Commission. He will be stationed at Laredo, where Judge H. E. Bell, supervisor, said an additional deputy is needed to take care of the many gas wells, which are giving the operators trouble. This brings the deputy supervisors to 15. At least 10 more are needed to cover the Texas fields, Judge Bell said. McKay has worked seven years in oil fields, having drilled wells in Texas, Wyming, Old Mexico and South America.

LOUISIANA MAY NOT ALTER CARBON LAWS

MONROE, La., Apr. 17.—Speaking before a luncheon club, State Senator T. L. Hood declared that in his opinion the coming session of the Louisiana Legislature will see no radical legislation against the carbon black industry operating in the Monroe Field. He said those favoring radical laws curtailing consumption are not informed as to true gas field situation, expressing the belief that the legislators will leave control entirely up to the Department of Conservation.

He pointed out that to date direct control by the department has brought consumption down to 275,000,000 feet daily, through cooperation of the carbon black companies. Instances of violations of the law have been few, and confined to two companies not represented at conferences when the conservation program was formulated.

Sentiment in this section strongly supports the stand taken by Senator Hood. It is felt that economic laws will regulate and eventually eliminate carbon black manufacture in the field. As soon as other uses for the gas with higher return than that from black making develop the plants will be closed down.

It is felt that pipe line projects and industrial operations offer the ultimate solution of the problem.

The carbon black industry plays an important part in supporting expenditures by the gas field parishes. More than $300,000 accrues yearly to the three parishes in taxes and another $100,000 goes to the state in severance taxes.

NEW TRIAL IS DENIED IN WICHITA GAS CASE

WICHITA, Kans., Apr. 17.—Judge Grover Pierpont has denied the Empire Natural Gas Co. a new trial in the "sixteen-dollar service charge" case, brought in June, 1922, by Earl C. Elliott, city manager, to prevent the gas company carrying out a threat to shut off the gas of all persons who refused to pay the service fee.

The case probably will be appealed to the State Supreme Court where, because of a ruling by the Federal Court, it must end. If the gas company loses, a sum approximating $100,000 "may be returned to gas users of Wichita," an attorney interested in the case said.

The case, originally filed in District Court, was taken into Federal Court before a decision was rendered. Evidence was heard by a special master, who recommended a decision in favor of the gas company and this decision was upheld by Judge Pollock. The case was then appealed by Elliott, through the city attorney, but the Circuit Court of Appeals remanded it to the District Court for lack of jurisdiction.

EXTEND MONROE FIELD?

MONROE, La., Apr. 17.—Two good gassers brought in in the Monroe Field, both of them nearer to the city than any previous wells, support belief that the field is holding up well and that future measurements will show an ample supply of gas for years to come. The rock pressure in the Pioneer well was said to be around 1,000 pounds, showing that the Swartz area, in which the wells are located, has built up to almost its original pressure under regulations imposed by the conservation department.

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And out of the nine thousand nine hundred and ninety-nine on the market or recorded in the Patent Office at Washington, Axelson Pumps stick out like a pyramid among the sand dunes of Egypt. They are basicly correct in design, proved by years of service . . . operating under every conceivable pumping condition.

Axelson Pumps work. Whatever the problem, however deep the well, however sharp the sand, Axelson Pumps work. Everywhere they are cutting down the cost of production. Wells that had to be pulled every few days are now producing without interruption for months and years.

Every well is a problem in itself, and a complex problem. The gravity of the oil, the depth, diameter, temperature and inflow of the well are just a few of the points for consideration and study. And for every well Axelson makes a pump that gives longer and better service than any ordinary working barrel.

The men at the Frick-Reid Store in your field will gladly make recommendations based on their knowledge of the field in which you operate.

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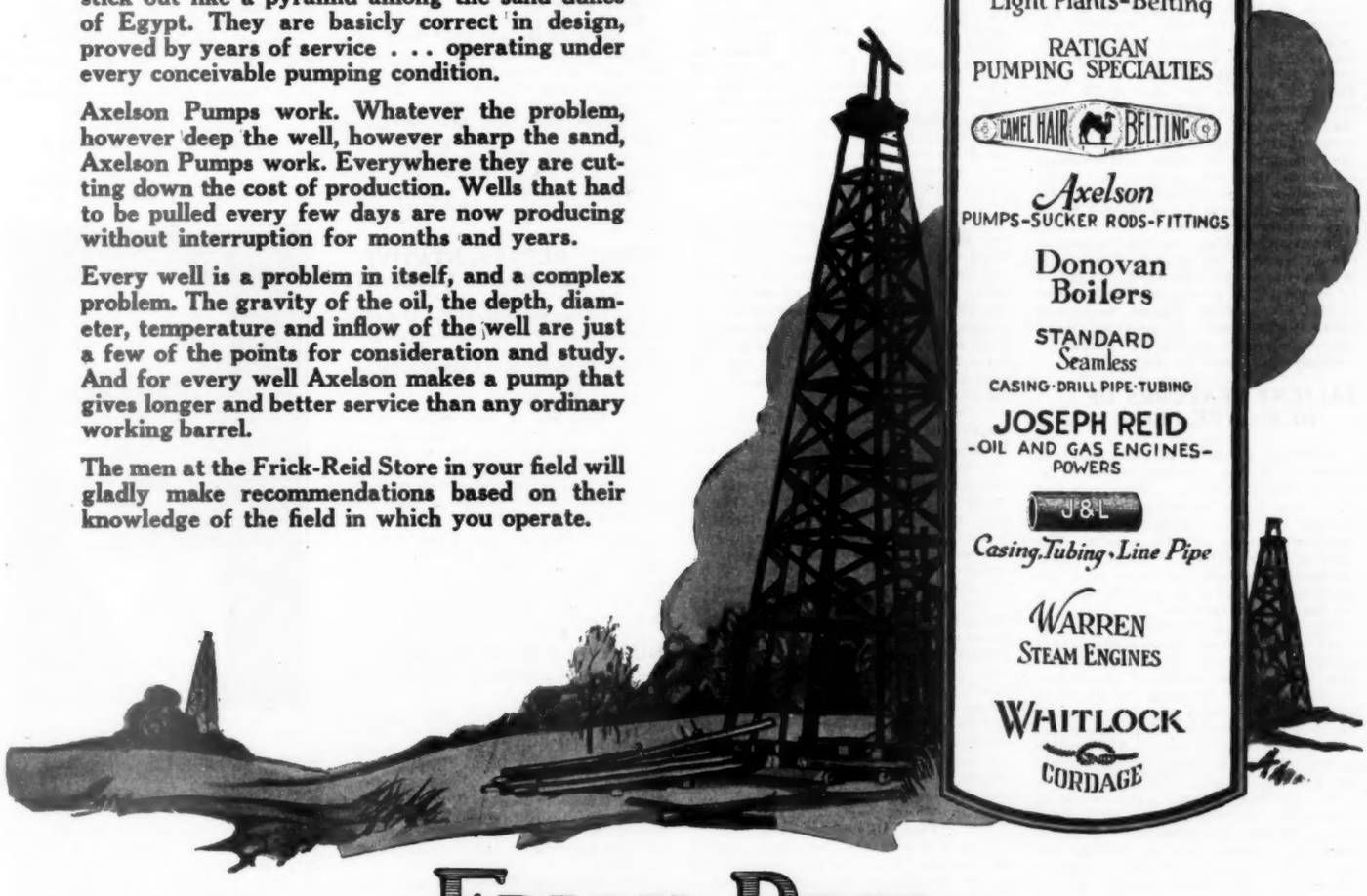

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West of the Mississippi—Stores Everywhere
East of the Mississippi—The Frick & Lindsay Co.

EQUIPMENT AND SUPPLIES

STANDARDIZATION OF ROTARY EQUIPMENT

J. F. Lucey, national chairman of the special A.P.I. committee on Standardization of Rotary Drilling Equipment, announces that the committee has practically agreed upon all the threaded connections used for rotary drilling, from the swivel to the fishtail bit. The final recommendations on drill pipe will be circulated by the institute as soon as they can be put into specification form.

Definite decision was not made on the form of thread for the tool joints, as it was felt that further field tests were required. All other dimensions, however, of the drill pipe and tool joint are complete and it is expected to make a definite decision on the tool joint thread at the mid-year conference on standardization to be held in Colorado Springs in June.

Definite standards were adopted on chain and sprockets and other items relating to transmission, as well as miscellaneous standards relating to hoisting blocks, hooks, etc.

"It is important," Chairman Lucey adds, "that the average field man be informed of what is being done in this standardization movement, especially as relating to the threaded connections in rotary drilling. This question is of extreme value and importance to them. There is possibly no other single item that causes more difficulty in the field than threaded connections and taper joints that do not properly fit. Upon the completion of these recommended standards they will contain the necessary tables on gauges, which will enable every manufacturer to secure the necessary master gauges for these threaded connections. When the ramifications of the oil industry are considered, not only in this country but abroad, it is difficult to estimate the savings that will accrue to the oil operators through the use of reliable standards. It provides, possibly, the largest avenue to substantial economy that could be devised."

SALIENT FEATURES OF NEW TYPE PLUG VALVE

The Barco balanced and lubricated plug valve, which is a comparatively new device in the oil industry, follows standard plug valve design in its straightway port through the valve and is operated by a one-quarter turn of the handle. The valve is made entirely of metal, without nonmetallic packing or seats and the metal used is said to be specially adapted for the services specified.

One of the salient features of this valve is the spring steel semispherical gasket used between the gland, body and plug which is susceptible of adjustment by tightening or releasing the gland in order to relieve the wedging action ordinarily encountered in plug valves between the plug and body. This spring gasket relieves the wedging action without pushing the plug off the seat.

An important feature is the method of lubrication, which is handled by a lubricating chamber and lubricator. This lubricating chamber may be filled by the use of an ordinary industrial Alemite grease gun, after which lubricant may be fed to the valve seats as required from time to time by a slight tightening of the lubricator itself. Filling of the lubricating chamber is required only at long intervals. This lubricator is equipped with a check valve arrangement so that lubricant is fed to the wearing surfaces of the valve while the valve is in service without any danger of grease blowing back or being lost through leakage.

These valves are made either screwed or flanged ends in straightway, three-way and four-way types and in various metals suitable for various fluids, including oil, water, gasoline, acids and other chemicals.

ACTIVITY IN STEEL UNPRECEDENTED; OIL COUNTRY PRICES CONTINUE FIRM

By B. E. V. Luty

PITTSBURGH, Pa., Apr. 19.—In business circles generally there does not seem to be a realization of how very active the steel trade has been of late. People even ask when business is going to get better, whereas it has been so active that there is practically no chance of its changing except in the direction of getting less active. Of course prices for some steel products might easily be better, from the mill standpoint, as they are not far from cost, but when the very heavy demand of the past few months has not put prices up it should not be expected that they will go up in the future. Pipe is not included in this reference, as it has not had the heavy declines in the past two or three years that have been witnessed in some other lines, sheets and plates in particular.

As to the activity in steel, it has been more than unusual; it has been unprecedented from a tonnage standpoint. Production of steel in the four months through February was at a steady rate, slightly above the average rate in the best four months in the past. Then came March, with a rate 2.8 per cent above the highest rate ever shown for a month—in March, 1924—and the production during the five months through March was 5.2 per cent above the best previous record for five consecutive months, that having been in the period February to June, inclusive, 1923.

Continued Activity

It is not, however, the particularly high rate struck that is especially remarkable. More remarkable is the continuance. In the past high rates have been simply peaks, followed promptly by decided recessions, partly from consumption decreasing, but more largely in most cases from buyers having become stocked and being moved to liquidate. This time the steel appears to have gone promptly into actual consumption.

There is practically no chance that this month will show heavier production than March, but there is no likelihood of any serious decline before midsummer. Past records for six and more months are not nearly as good as records for one, two or three months, and the prospect therefore is that the eight months through June will show a bigger margin over the previous record for eight months than the 5.2 per cent shown for the past five months.

The Steel Corp.'s unfilled tonnage decreased 236,887 tons in March, against decreases of 265,917 tons in February and 150,625 tons in January, there having been large increases in the last four months of the old year. The March decrease was not particularly unfavorable. Current buying was heavy, in some lines heavier than in either of the two preceding months, but there were natural decreases in rails and tin plate, which were strictly in season as to shipments and quite out of season as to buying.

Pipe Mills 85 per Cent

Pipe mill operations continue to average between 85 and 90 per cent, possibly nearer the 85 per cent. Mills refer to merchant pipe demand being somewhat poor, and expect it to improve as actual spring weather comes. It seems poor, however, chiefly by comparison with oil country goods, which have been particularly active, with good buying by the oil fields, excellent buying by gas companies in western Pennsylvania and West Virginia, and a good lot of line pipe business booked earlier in the year. There is no line pipe buying of importance at the moment, but present orders will last the mills from one to two months still, and it is understood many projects are on the boards.

Pipe and oil country goods prices are perfectly firm all along the line, as they have been right along.

Valley pig iron declined last week $1.50 on foundry, on actual sales of some consequence, and $1 on Bessemer and basic, simply by relation, there being no activity in these lines. The pig iron market as a whole continues remarkably dull.

Connellsville coke has been very dull and prices are easier, standard furnace coke being $3, with possibility this price would have to be shaded to move any tonnage, and foundry coke being 25 cents lower, at $4.25 to $4.75.

NORTH AMERICAN CAR CORPORATION NEW NAME

The corporate name of the North American Car Co. has been changed to the North American Car Corp. Additional capital has been arranged for which will enable the company to make material extensions in its service.

Starting 18 years ago with 25 cars, the North American Car Corp. has steadily grown until today it is one of the country's leading lessors of tank, refrigerator and provision cars. Its service includes bulk and loaded car storage at Chicago, Tulsa and New Orleans in addition to modern car repair shops at Chicago, Coffeyville, Tulsa and New Orleans. The same officers who have guided the policies of the company in the past will continue to guide them in the future.

DIRECT REPRESENTATIVE FOR PAINT COMPANY

The Tnemec Paint & Oil Co., of Kansas City, manufacturers of Tnemec rust-proof paint, have announced the appointment of Jack Reynolds as its direct sales representative for its oil industry paints in Oklahoma and Kansas.

Mr. Reynolds is well known among the purchasing agents and production and refinery superintendents of the oil companies in the Mid-Continent. His headquarters will be in Tulsa, and his mailing address will be in care of the Continental Supply Co., Tulsa.

Tnemec paint is now widely used in the Mid-Continent for painting storage tanks and all kinds of out-door metal work. Tnemec is a patented product in which portland cement has been successfully incorporated as a pigment.

BURT FLEEGER JOINS OKLAHOMA CASTINGS

Burt Fleeger, treasurer, sales manager and a director of Sivyer Steel Casting Co., Milwaukee, has resigned, to become associated with Oklahoma Steel Castings Co., of Tulsa, Okla., as vice president. Mr. Fleeger, who has been with the Sivyer organization since 1923, has acquired a substantial interest in the Oklahoma company and is now located in Tulsa.

The Oklahoma Steel Castings Co. is preparing plans for an extensive addition and is purchasing more equipment which will materially increase its capacity of electric steel castings.

AXELSON CHANGES

Several changes in the personnel of the Axelson Machine Co.'s field organization have recently been made, providing promotion for old employes and making openings for new members.

W. R. Lake, formerly covering the Kansas district, has been transferred to the Tulsa district to replace "Dutch" Zwerneman, who has been placed in charge of certain Los Angeles districts. Earl L. Chandler, who has just recently become associated with the Axelson organization, will represent the company in the Kansas district formerly covered by Mr. Lake. Other new members joining the company include Luther F. Lamb and Robert B. Stout. Mr. Lamb will serve as representative in the Wichita Falls Field, while Mr. Stout has been delegated to cover the Dallas district.

FOUR THINGS CONSIDERED IN PAINTING OIL TANKS

Four subjects should be considered in connection with painting of oil tanks, according to a unique folder recently issued by the Detroit Graphite Co., manufacturers of "Silvr-Cool," a super-aluminum bronze paint. These subjects are evaporation, sightly appearance, protection and ease of application and cost.

Silvr-Cool, the booklet states, has been in practical use for years in the oil industry and experience has proved that every package of it will not only leaf, and leaf within the proper time, but it will do so with the least skill of manipulation. Also, that when it does leaf it will give the most brilliant surface obtainable.

A small folder accompanying the above booklet shows a picture of an 8,000,000-bbl. storage tank farm belonging to one of the largest refineries in the country, entirely painted with Silvr-Cool.

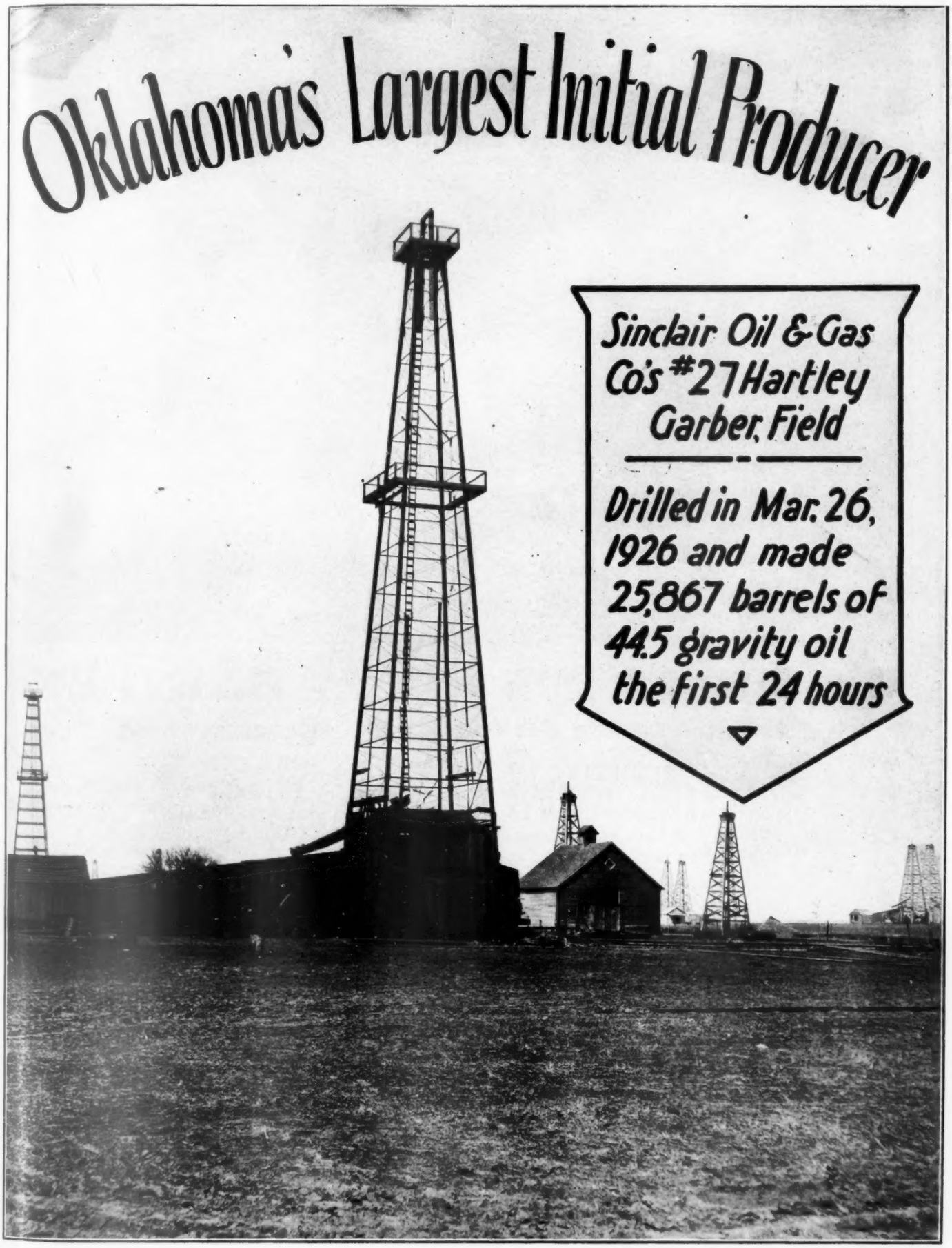
HEADS PUMP COMPANY

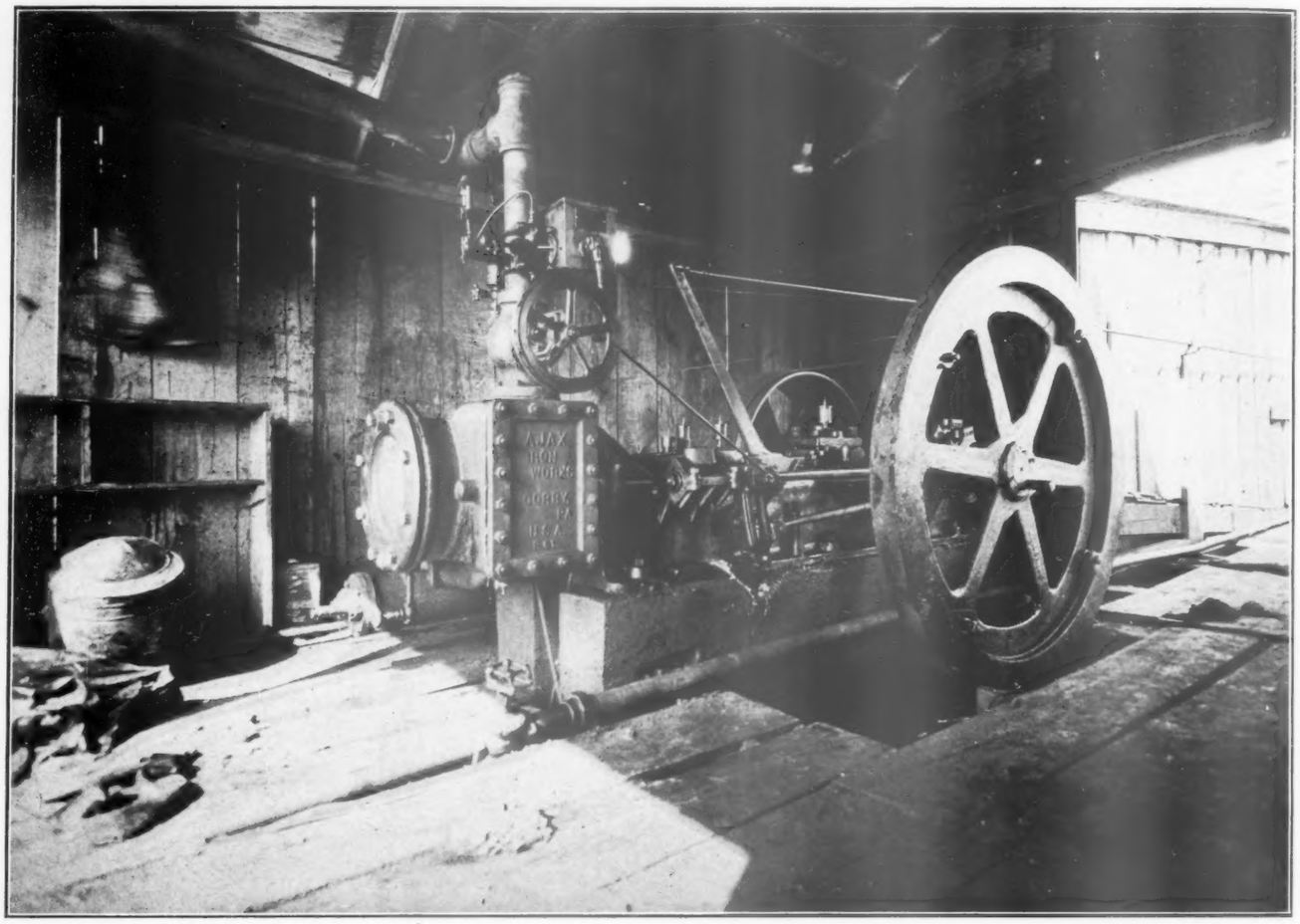
A pioneer returned to active control in the pump industry recently when C. C. Fredericks, of St. Louis, was made president of the St. Louis Pump & Equipment Co. Mr. Fredericks was one of the founders of the St. Louis company. Before helping to organize the St. Louis Pump Co., Mr. Fredericks was with the S. F. Bowser Co. of Fort Wayne, Ind.

C. C. Fredericks

CONTRACT FOR TANKS

OKLAHOMA CITY, Okla., Apr. 10.—A contract has been awarded to G. W. Wiley of Fort Collins, Colo., for erection of four 10,000-bbl. tanks along the line of the Midwest Refining Co. that is being laid between the Rattlesnake and Table Mesa districts of the San Juan Basin of New Mexico to Gallup. One of these is to be at Table Mesa, another at Gallup and two between these points. Navajo Indians are being employed at laying the pipe line and completion is promised by June 1. Five pumps are to be installed along the line.


Oklahoma's Largest Initial Producer
Sinclair Oil & Gas Co's #27 Hartley Garber Field
Drilled in Mar. 26, 1926 and made 25,867 barrels of 44.5 gravity oil the first 24 hours



ON SINCLAIR'S NO. 27 HARTLEY

a tribute to the Oil Industry's aggressiveness and AJAX SUPERIORITY!

The remarkable record established by the Sinclair Oil & Gas Company's well at Garber may have been due to an element of 'luck," but the fact that an AJAX ENGINE was used to drill it in demonstrates its premeditated preference by the leaders in every field.

AJAX ENGINES' reputation for close hauled economy has been won over a period of years almost equalling the life of the Industry itself. Their records in every field, under all conditions, are your surest guarantee of perfect engine performance.

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AJAX IRON WORKS

CORRY, PA.

Distributed by

NATIONAL SUPPLY COMPANIES

in every oil field

AJAX ENGINES

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34150

An Unexpected Record Maker

The Sinclair company's Garber gusher which for three weeks has been the most talked about well in the United States had many remarkable features about it besides mere size of output.

Its largest production for a day was 25,867 bbls., entitling it to the distinction of being the largest initial producer of high gravity oil ever completed in the Mid-Continent and the largest initial producer in Oklahoma.

Its total production for 10 days aggregated 209,218 bbls.

Its oil will yield 40 per cent gasoline by straight distillation and 70 per cent by cracking. These yields can be increased at many refineries.

In other words, it was capable for that period of producing 146,447 bbls., or 6,150,774 gallons of gasoline, sufficient to provide 12 days' supply of motor fuel for all the cars in Oklahoma.

Measured as crude oil its initial daily output eclipsed that of many pools, including the entire Garber Field, for the week preceding its completion.

Strangest of all, perhaps, was the fact that its unexpected production has not led to the drilling of one additional well. One offset had already been completed about 200 feet deeper, yet producing only 400 bbls. a day.

So close was the demarcation between this phenomenal producer and that offset that it may be said the actual dividing line was represented by the fence on the property line.

Such are the vicissitudes of oil seeking and finding.

It is believed that this area of gusher production will be extremely limited, although two other good wells had been completed on this lease. Coming at a time when the production of the field was thought to be declining it was the more sensational.

The fact that it is producing from the deepest formation in Oklahoma—the siliceous lime—will give an added impetus to deeper drilling, first made fashionable in California three years ago. It is now very generally believed that California's experience in that regard is not to be localized as witness the success of deeper drilling in many of the fields throughout the country.

It goes to prove once more that oil is where it is found and no one is justified in trying to limit the possibilities until established by the supreme test of the drill.

When the Garber Field first came into prominence with the completion of the Sinclair company's No. 25 Belveal there was a period when it was feared the discovery of a new pool might upset the industry, then striving to regain its stability after the experience of California, Powell, Wortham and the rest.

Garber's peak, last November, was 72,622 bbls. It is interesting to imagine what might have been the feeling had the drill struck No. 27 Hartley instead of the original discovery well.

But the oil producer's life is a series of such question marks. That is the fascination of what he fondly calls "the oil game"—its unguessable uncertainty.

The public, reading of the No. 27 Hartley, jumps to the conclusion that finding oil is just like that, utterly forgetting or not knowing that for every No. 27 Hartley there are scores and scores of thousands of disappointments as disheartening as this gusher was so unexpectedly a record maker; wells that do not make enough to pay for their drilling and holes that are only holes, not wells at all.

What other industry, encountering like risks and uncertainties, would keep so everlastingly plugging along, undaunted and irrepressibly hopeful as the oil industry has shown itself to be throughout its history from the day of Drake to the present hour?

Just How Big Is a 26,000-Barrel Well?

Back in Oil City District it Will Take 17,333 Oil Wells and 47 Years of Drilling to Accumulate Total to Equal it

By James McIntyre

Just how big is a 26,000-bbl. initial producer? Such a one is sure a whale of a well, but how are we to go about it to make it loom up in a proper proportion?

Well, for one thing it is 100 times the size of the average oil well completed in the United States last year, and 143 times the size of the average well for 10 years past.

We are discussing the Sinclair Oil & Gas Co.'s No. 27 Hartley, located in the NW cor. of Section 18-22-3w, in the Garber Field, Garfield County, Oklahoma, a Wilcox sand producer.

This well produced more oil the first day it was gauged, (25,867 bbls.) than all the 3,013 oil wells completed in the fields of New York, Pennsylvania, West Virginia and southeastern Ohio last year on their first day.

It produced 12 times as much as the combined initial production of all the wells completed in the central Ohio fields last year; over three times as much as all the 512 wells completed in the Lima Field; 16 times as much as all the initial production of the 82 wells completed in Indiana.

One thousand and sixty oil wells completed in Kentucky combined fell 10,000 bbls. short of the first day gauge of this remarkable deep sand well in Garber.

Swinging into Illinois, we find that the 170 oil wells completed last year had a combined initial production so far below that of the Garber gusher that it would have taken 418 such wells to have equaled it.

But these are all old fields where big wells range from 10 to 200 bbls. depending upon the area they are drilled in. Let us take a run down to Arkansas where gushers were numerous for a part of last year. Let us go into the Smackover Field.

Big as 24 Smackover Wells

The reader will recall that in April and May, and even later, last year, big wells were coming in so thick and fast in that field that husky scouts with their tongues hanging, draped themselves over telegraph desks breathing hard as they wrote the messages to headquarters telling the big story of the day's results. One newspaper correspondent saw a well flow 11 minutes and put 500 bbls. into a tank in that time and he wired his paper that the Roxana Petroleum Corp. had a 65,000-bbl. well. The fact is that the well was pinched down to a minimum after the 11-minute test and never had a wide-open gauge for 24 hours until some time later. But even with the perhaps excessive estimates on initial production in those flush days of spring and early summer, when the year's work in the Smackover Field was all summed up it was found that 1,175 oil wells had been completed and that their combined initial production was 1,286,097 bbls. If you take the trouble to figure out the average per well you will find that it would take 24 of the average Smackover wells of last year's crop to equal the first day gauge of the Sinclair record breaker.

When we filter down into north Louisiana, we get a real shock, because there it is found that the Sinclair well produced more oil the first day than all the 202 oil wells completed in 1925 in the Bellevue, Caddo, Haynesville, Homer, Cotton Valley, DeSoto, Red River, Elm Grove and Urania Fields, which comprise the whole north Louisiana territory.

How Texas Matches Up

From Louisiana to the Gulf Coast fields is not much of a trip so in order to get a real slant on this well which Berry Griffith, Wiley Martin and C. E. Turner stayed awake nights to watch and ward, we'll take account of the completions in that wide-spread territory. The Oil and Gas Journal's records show that the oil wells, finished in the Gulf Coast last year averaged 466.6 bbls. the first day. Fifty-six such wells would just about equal the pride of Garber, while it would take over 100 average Southwest Texas wells, and this includes Luling, to equal it.

East central Texas makes a better showing. Gushers were popping thick and fast in Wortham in the early part of last year and these big ones pepped up the average for the whole field which consists of the famous Powell, Mexia, Wortham, Currie and Richland areas. As big as the Wortham wells were, the average east central Texas well would have to be multiplied over 30 times to come up to No. 27 Hartley. As for north Texas, or rather the combined north, central, west and Panhandle Texas fields we would have to pick out 111 average wells to get a combined production close to that of the "subject of our sketch."

87 Oklahoma Wells to Match It

Well, we have thrown brickbats at the fields in the east and the south. How about the old home State of Oklahoma! How does its average oil well measure up with this oleaginous Niagara Falls in Garfield County? Not so good. With the modern 10-acre spacing so popular in the deep sand country in our fair State, five leases of 160 acres each would not be enough to hold the number of wells required to supply 26,000 bbls. a day if picked from last year's Oklahoma crop of average new oil wells. In other words, it would take 87 average wells of the Oklahoma batch to match up with this affair over in Garber.

Now this could be made monotonous, and far be it from us to weary our public, but as long as we have said so much and so little about other states it is only fair to show the Kansas Jayhawkers and the Lonesome Pines of the Rocky Mountains how big a well the Sinclair people had when they first gauged this No. 27 Hartley, by comparing it with the average wells in Kansas and the Rockies.

For instance, it would take 160 Kansas oil wells, over 200 Wyoming, 121 Montana, 50 Colorado, nearly 50 Utah (there was but the one) or 160 New Mexico wells to come up to Our Brave Boy of Garber, figuring in each case on the average oil wells completed in those states last year.

How California Sizes Up

Hard as is the duty of humbling the pride of God's chosen people, the Californians, their field will have to be shown up along with the rest. Californians drilled a lot of big wells last year. They made a better record than in the year before, but the 948 oil wells completed averaged only 534.8 bbls. per well in initial production, so we will have to lay out 48 of them and even then we will have a total which is short of the Sinclair well's, and 48 wells would cover a 480-acre deep sand Oklahoma lease, which would be a very sizable property. Of course California boasts a well that started off at 70,000 bbls. a day and made 9,000,000 bbls. of oil before it fell over exhausted, but that was in bygone days, and we are dealing with the present and immediate past.

Bradford's Long Job

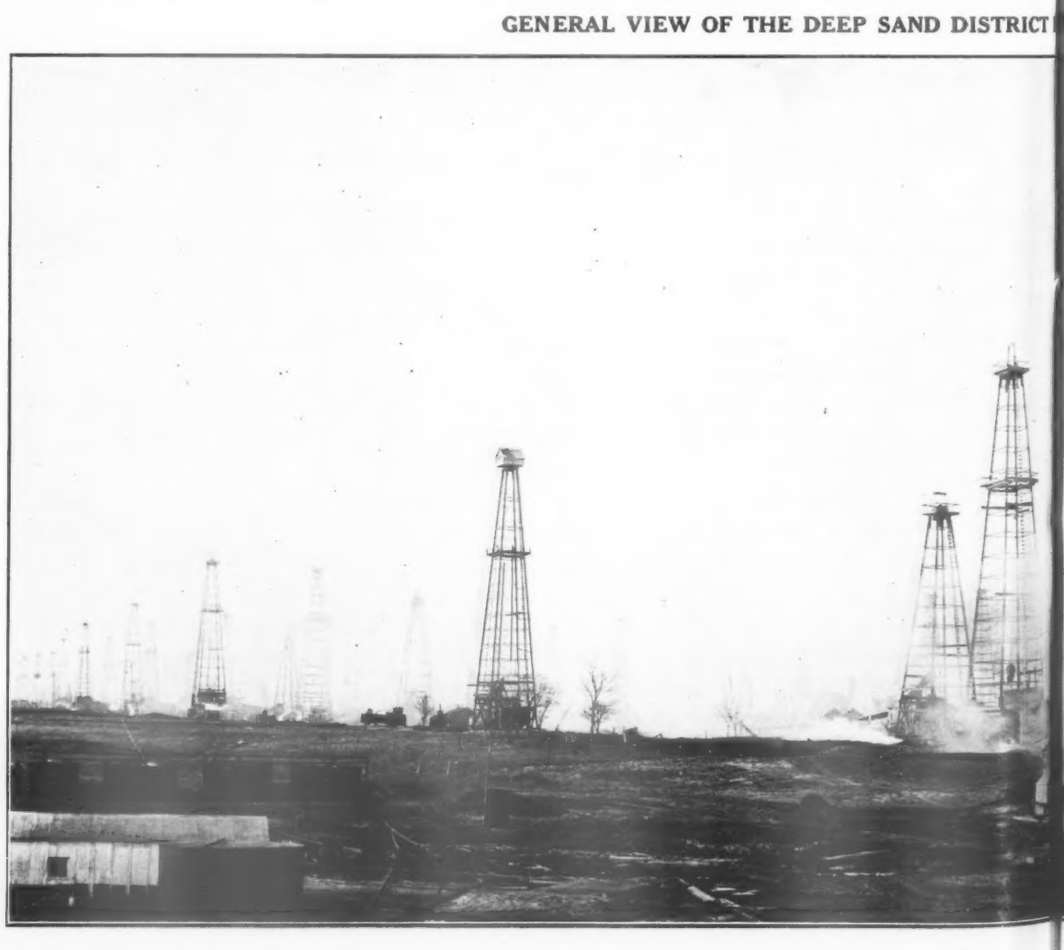
The whole oil industry is making a great fuss over Bradford. Well they may, for Bradford has a past which yielded about 250,000,000 bbls. of oil, more or less, and the wise men of the geological world claim there are a couple of billion barrels of oil left for the boys to get out. They are drilling their heads off back there to get it, or as much of it as the water drive and the air compressor can shove ahead, yet the wells there average only 2.6 bbls., in initial production. This is to tell Eddie Booth, Bill Healy, Bill Piper, Forest Dorn and the rest of the prosperous producers in that ancient but honored territory, that it will take them about 10 years' time and the drilling of about 10,000 oil wells, (which means over 230 miles of hole) exclusive of the "water wells," to tab a combined initial production as great as that of the biggest well in the Garber Field. Fine for the supply houses!

But Think of Venango-Clarion!

But the job of the Bradford producers to accumulate a combined initial production which will approach that of Sinclair's champion is as naught compared to what the boys down in the Cradle of Oildom are up against. At the rate they

(Continued on Page 90)

GENERAL VIEW OF THE DEEP SAND DISTRICT



12 Years of Scattered Deep Drilling

Sands Below Bartlesville Have Supplied Many Million Barrels Oil in Oklahoma, Undreamed of in Early Days

By James McIntyre

Robert Galbreath and George Barnes met in Tulsa a few days ago, after years of separation. Mr. Galbreath had come up from Texas and Mr. Barnes from Muskogee, and their meeting was purely accidental, but it was followed by a season of reminiscences that brought them back to the discovery of the Glenn Pool and from that point down the line of events that culminated in the recent discovery of Wilcox sand production not far from the Galbreath discovery well in Section 10-17-12, after a passing of 18 years.

It was on November 10, 1905, that Bob Galbreath and Frank Chesley, drilling a wildcat on the Ida Green allotment in 10-17-12 opened a pool with an 85-bbl. initial producer in the Glenn sand. It started the greatest field development west of the Mississippi River, which resulted in a field that occupied the large part of four townships and which reached a production estimated from 120,000 to 135,000 bbls. a day. Mr. Barnes' father owned a large acreage in the field and drilled 175 wells which were later sold to the Prairie Oil & Gas Co.

The Glenn Pool was the largest high-grade oil field in the country up to the time the Cushing-Shamrock Field was at its height in 1915, and it was believed by operators generally that its equal would never be found in Oklahoma. It produced many big wells, but none of them broke the records made in the early nineties by wells in the McDonald Field in Pennsylvania or the Lima Field in Ohio. The average production of the Glenn Pool wells was high and they proved to possess wonderful staying qualities.

Had Much to Discuss

The meeting of Messrs. Galbreath and Barnes came at a time when the Sinclair Oil & Gas Co.'s wonder well in the Wilcox sand on the Hartley farm in the Garber Field in Garfield County, Oklahoma, was being discussed and while crowds of curious people were motoring out from Tulsa to Section 6-18-12, about 7 miles north and 3 miles west of the Galbreath discovery well to see a brace of Wilcox sand gushers in the north end of the Glenn Field, the property of the Sun Ray Oil Co. and others.

The pair of veterans of Glenn Pool days little dreamed back in 1905 and 1906 of the millions of barrels of crude stored in the earth below the Bartlesville sand horizon for the Glenn and the Bartlesville are one and the same. For eight years after Bob Galbreath opened the Glenn Pool the conviction held that there was no oil below the top of the Mississippi lime. Many leases contained the clause that the property leased must be tested to the top of the Mississippi lime. Few men believed that there could be oil below that horizon.

Some curious-minded chap connected with the Barnsdall interests operating in the Osage Nation and other fields north of Tulsa got it into his head that no one had proved there was no oil in or below the Mississippi lime and he must have kept talking about it so much that he finally convinced others that deeper drilling was a chance worth taking, because the Osage & Oklahoma Co. drilled an old Bartlesville sand well, No. 173, in Section 8-20-12, to a break in the Mississippi lime at 2,036-44 feet and got a 2,000,000-foot gas production. This gas was struck on October 8, 1913. The following year the same company drilled No. 200 Mabel Kennedy, in the northeast of the southwest quarter of Section 8-20-12, to sand at 2,125-75 feet and the well started at 13 bbls. an hour, with 1,000,000 feet of gas. This was the first Wilcox sand oil well north of Tulsa, but it was not known for several years that this sand was the same as that opened by Homer F. Wilcox on April 20, 1914, with his No. 1 Gracie Collins, in the northwest quarter of Section 3-16-13, Bixby district, Tulsa County, which started at 600 bbls. a day. The Wilcox discovery came a short time before the Osage & Oklahoma company discovered oil in the same formation, and no one has ever tried to take credit for the opening of the Wilcox sand from Mr. Wilcox.

Needed Only a Start

Drilling below the Bartlesville became quite common after the experience of Wilcox and the Osage & Oklahoma Co. and it was due to this curiosity to see what's in the bottom of the bag that prompted the deeper drilling of the Cushing-Shamrock Field, and which resulted in the largest field of high-grade oil in the country. Our readers are familiar with the story of the Gypsy Oil Co.'s No. 13 Jackson Barnett in Section 5-17-7, an old Bartlesville sand well drilled deeper. Seventy-five feet below the Bartlesville sand the Tucker sand was found and the well developed into a 14,000-bbl. producer. But it was not the only big one in the deeper sand. The Midco Petroleum Co.'s No. 10 Benoche Fixico, in Section 17-18-7, a 500-bbl. well in the Bartlesville sand, was deepened to the Tucker and from the top of the sand made 6,800 bbls. a day, but as it drilled itself in the production increased to 10,484 bbls. a day on the gauge. This well came in in July, 1915, several months ahead of the Jackson Barnett gusher and was the biggest well in the field at the time. Other big wells included C. B. Shaffer's No. 5 Walker, Section 18-18-7, 9,600 bbls.; Numa Oil Co., on the Fife farm, in the south end of the field, 8,000 bbls.; McMan Oil Co., on the Musselman farm, Section 8-18-7, 7,000 bbls.; Hill Oil & Gas Co.'s No. 2 Sawyer, Section 27-17-7, 12,000 bbls.; C. B. Shaffer, on the Bruner farm, Section 33-17-7, 10,000 bbls. All these big wells in the Cushing-Shamrock fields were the results of deeper drilling. There were many wells of from 4,000 to 6,000 bbls. completed in the Cushing-Shamrock Field. Only the very largest deep sanders are listed above.

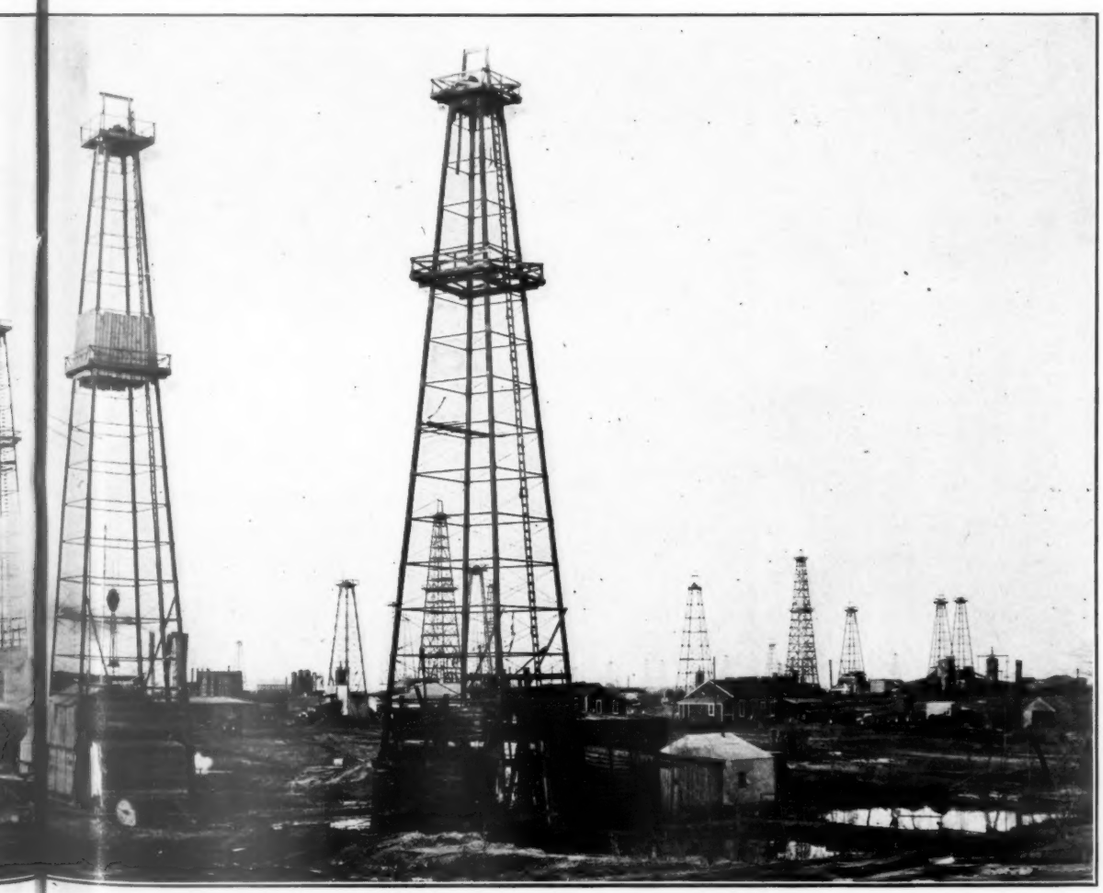
Big Wells in Osage County

Although the development of Osage County began as early as 1896, the first attempts at finding production were given up at a shallow depth. The first dry hole drilled was on a lease of the Indian Territory Illuminating Oil Co. on the northern fringe of the county and a half mile south of the southeast quarter of Section 14-35-11, in Chautauqua County, which would put the duster somewhere in Township 29-10, Osage County. McBride & Bloom were the contractors. It got a show of oil and gas at 1,080 feet, probably Bartlesville sand, but was abandoned at 1,100 feet. It was 18 years from the drilling of this well until the discovery of production in the second break of the Mississippi lime, now generally spoken of as the Wilcox sand. This sand has yielded the largest wells in the Osage Nation in point of initial production, and the king of them all in that respect was the Minnehoma Oil Co.'s test in Section 14-26-8, the initial production of which was rated all the way from 500 to 1,000 bbls. an hour from sand at 2,340 feet. The well came in unexpectedly. There had been no preparations made for big production and it flowed all over the prairie. It was ordered shut in until pipe line and tankage could be provided, but when it was opened it did not respond and never flowed another barrel. The Gypsy Oil Co. and Phillips Petroleum Co. in Section 20-22-10, Wild Horse district, got a real 10,000-bbl. well in 1920 when oil was selling at $3.50 per barrel (posted price). It was a Wilcox sand well drilled to 1,830 feet. The Gypsy Oil Co.'s famous Boston lease, which occupies all of Section 1-21-7, not far from the city of Cleveland, but in Osage County, yielded one Wilcox sand gusher of 8,000 bbls. at a total depth of 2,559 feet. In passing it might be stated that this Boston lease, which originally cost $2,000, has yielded up to April 15 a total of 11,310,423 bbls. of oil and was still producing 1,120 bbls. a day at the end of that time. It has been producing over 13 years and has yielded 17,673 bbls. to the acre.

Other big wells in Osage County as a result of going below the Mississippi lime included one by the Marland Refining Co.,

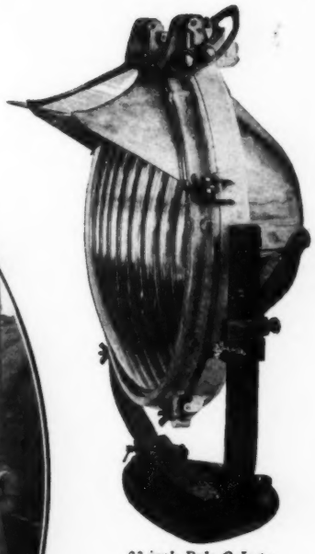
(Continued on Page 94)

HE GARBER FIELD, GARFIELD COUNTY, OKLAHOMA



THE DEEP PAY DISTRICT IN THE GARBER POOL, GARFIELD COUNTY, OKLAHOMA

The Pyle-National turbo-generator in the foreground furnished the current for the two Pyle-O-Lyte Projectors which are mounted to light the inside of the rig.



23-inch Pyle-O-Lyte Projector

Type "E" direct current steam turbo-generator

DRILLING of Sinclair's new well in the Garber Field was lighted by two Pyle-O-Lyte projectors, with current furnished by a Pyle-National steam turbo-generator.

Floodlighting is the safe, efficient method for real working light in the field, or around shops, yards, refineries, etc. Pyle-National turbo-generators furnish a dependable power supply for any rig lighting.

Send for full information on Pyle-O-Lytes and P-N turbo-generators.

The Pyle-National Company

General Offices and Works: 1334-1358 North Kostner Ave., Chicago, Ill. U. S. A.

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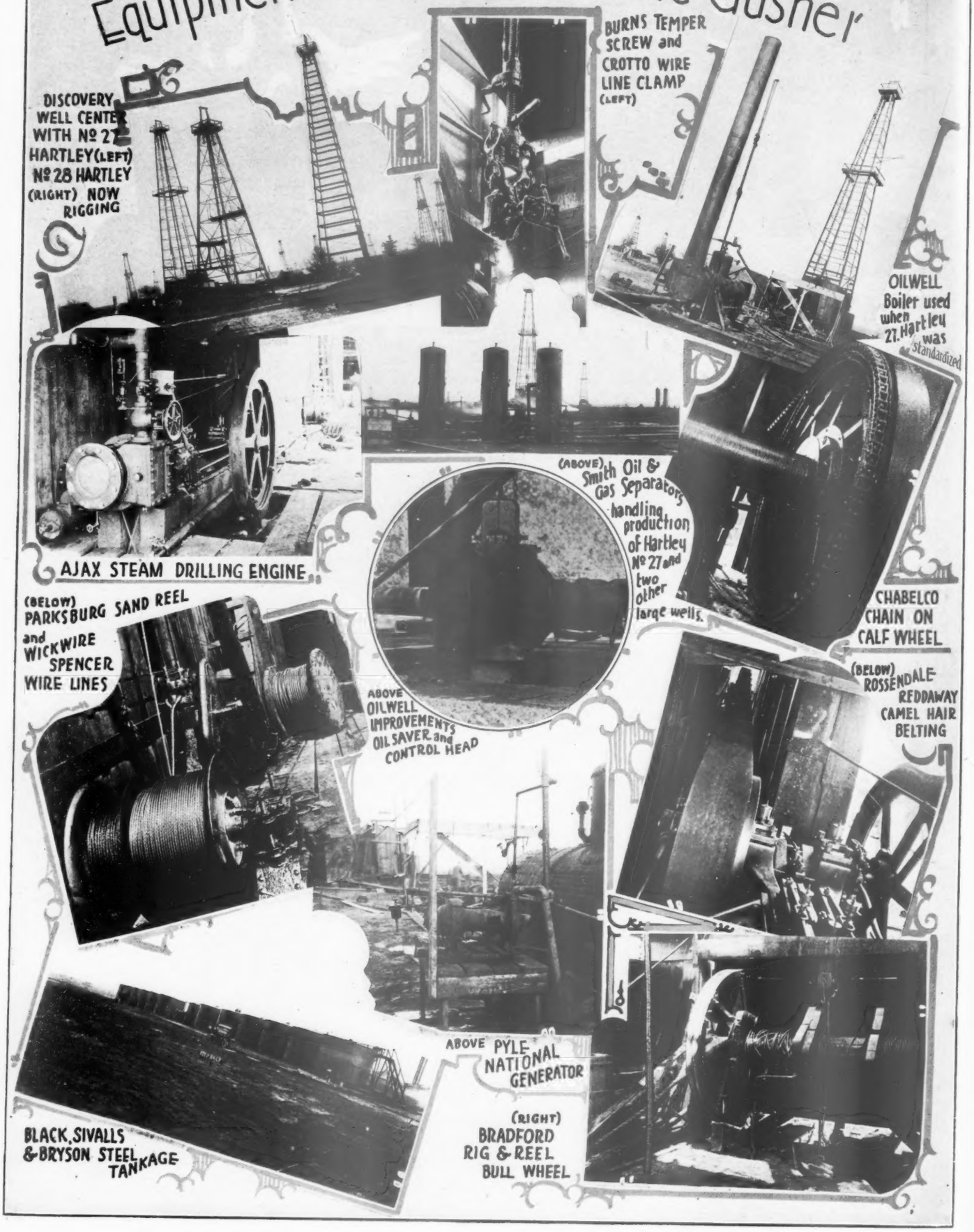
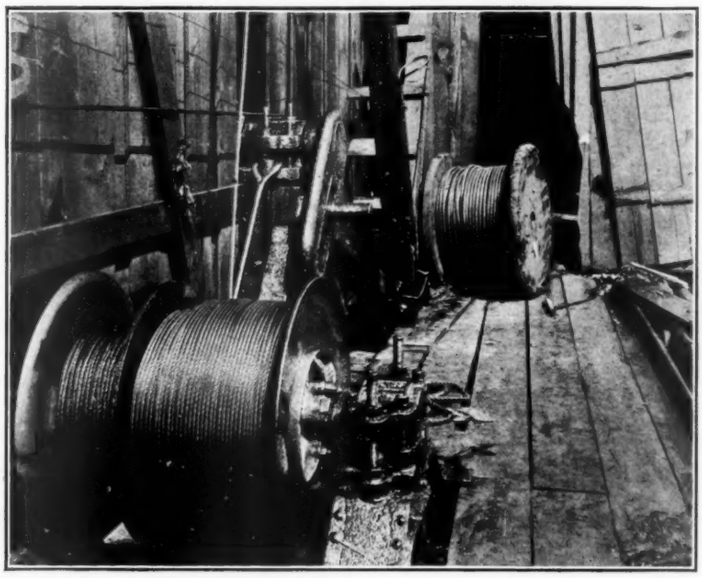
O&GJ 4-22 Gray

Equipment Used At Record Gusher


DISCOVERY WELL CENTER WITH No 27 HARTLEY (LEFT) No 28 HARTLEY (RIGHT) NOW RIGGING
BURNS TEMPER SCREW and CROTTO WIRE LINE CLAMP (LEFT)
OILWELL Boiler used when 27. Hartley was Standardized
AJAX STEAM DRILLING ENGINE
(ABOVE) Smith Oil & Gas Separators handling production of Hartley No 27 and two other large wells.
CHABELCO CHAIN ON CALF WHEEL
(BELOW) PARKSBURG SAND REEL and WICKWIRE SPENCER WIRE LINES
ABOVE OILWELL IMPROVEMENTS OIL SAVER and CONTROL HEAD
(BELOW) ROSSENDALE REDDAWAY CAMEL HAIR BELTING
BLACK, SIVALLS & BRYSON STEEL TANKAGE
ABOVE PYLE NATIONAL GENERATOR
(RIGHT) BRADFORD RIG & REEL BULL WHEEL



These are the Wickwire Spencer Wire Lines that finished the job. They are in perfect condition and ready for the next job.

WICKWIRE SPENCER WIRE LINES FINISHED THE JOB

Sinclair's Hartley No. 27 in the Garber Field, Oklahoma's largest initial producer, was drilled in by Haury Manahan & Company, Drilling Contractors, on March 26, 1926, with Wickwire Spencer Wire Lines.

WICKWIRE SPENCER STEEL COMPANY

General Offices:
41 East Forty-second Street, New York

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Rocky Mountain Oil Fields

GREAT NORTHERN TOOL & SUPPLY COMPANY Kevin, Mont.
MIDLAND IRON WORKS Billings, Mont.
LEIDECKER TOOL CO., Casper, Wyoming

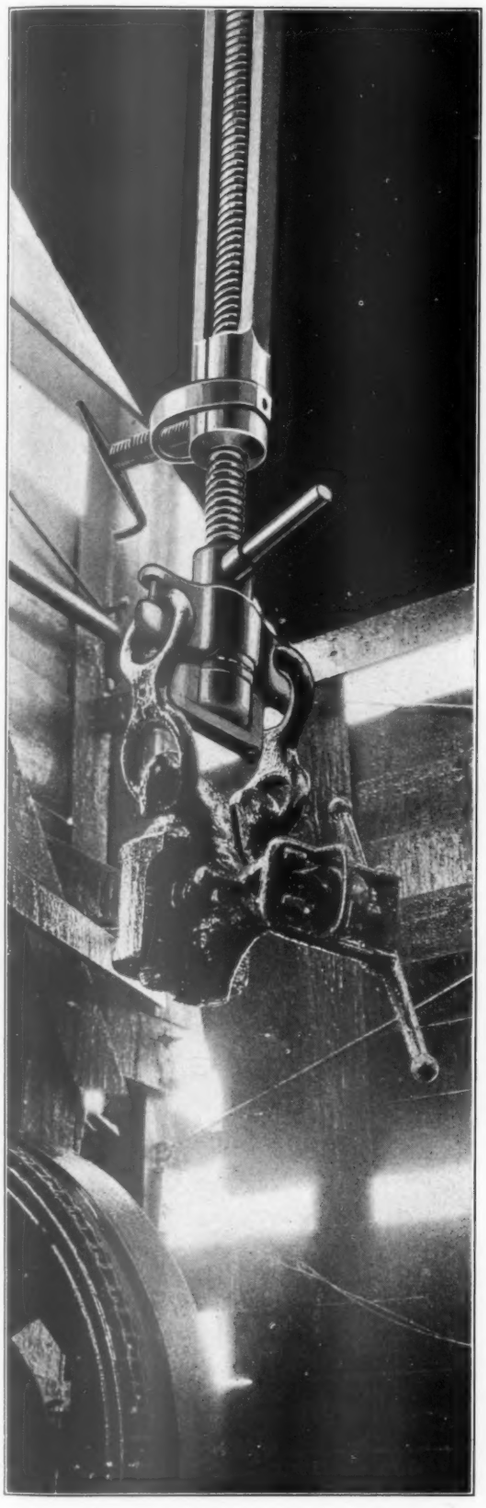
California Oil Fields

E. B. WIGGINS Los Angeles, Calif.

WICKWIRE SPENCER *PRODUCTS*

The Boys Who Brought In The Big Well
W.A. Martin Gen. Supt. of Production
Sinclair Oil & Gas Co.
G.A. Manahan DRILLING CONTRACTOR
Joe Delaney SUPT. OF ROTARY (Manahan Co.)
C.E. Turner PROD. SUPT. SINCLAIR O.+G. Co.
Frank Warren SUPT. OF CABLE TOOLS (G.A. MANAHAN Co.
Left Group (ROTARY CREW)
JOE DE LANEY SUPT.
ABE HEROD ROUGHNECK
C.A. SHELTON ROUGHNECK
GEO. ALLEN DRILLER
RC. ADAMS FIREMAN
J.C. MAYFIELD DERRICK MAN
Right Group.
W.A. MARTIN Gen. Supt. Sinclair O.+G. Co.
W.W. TAYLOR Field Supt Wertzberger Co.
G.A. MANAHAN Drilling Contractor
Ira Tarleton DRILLER
C.B. Wade TOOL DRESSER
CABLE TOOL CREW
O.H. Chandler DRILLER
Fred Braden TOOL DRESSER
"CREW THAT DRILLED 'ER IN"
V.E. Hines DERRICK MAN
Ernest Fuson ROUGHNECK
A.E. Trippe DRILLER
ROTARY
"Happy" Grove FIREMAN
CREW
Wm. Gunn ROUGHNECK
Jas. E. Raden ROUGHNECK.

Yes, the Burns Temper Screw Was At Hartley No. 27



And at many other deeper wells all over the world.

As wells go deeper, the prestige of the Burns Temper Screw rises.

The Burns Tubular Temper Screw

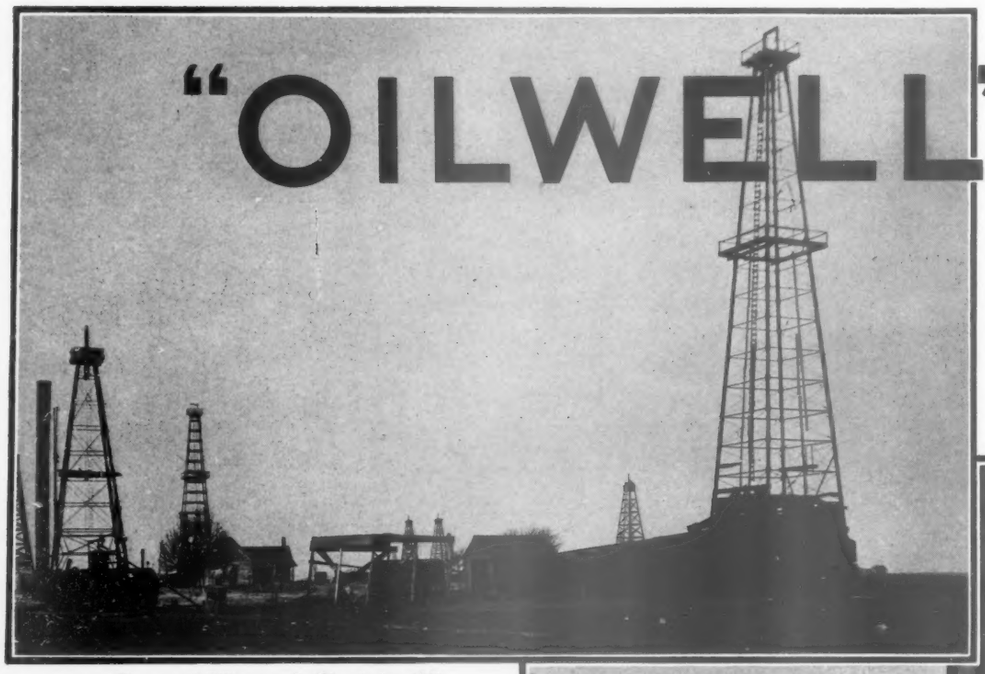
The Petroleum Industry is not being served more effectively by any other tool than the Burns Tubular Temper Screw. It is standard equipment and its presence always indicates the highest type of drilling tools. Every supply company throughout the Petroleum World carries it in stock. Could there be more complete acknowledgement of its superiority?

Manufactured by the BURNS TOOL COMPANY, Okmulgee, Okla., also manufacturers of the Carnes Oil and Gas Separator, the greatest improvement in pumping equipment in a decade.

BURNS TOOL CO.

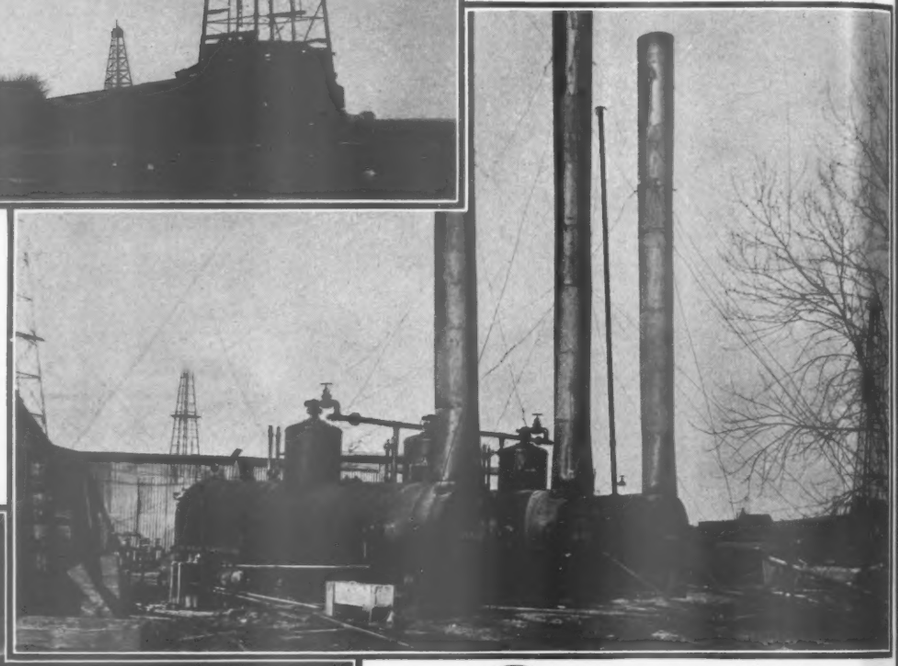
Okmulgee, Okla.

"OILWELL" Furnish

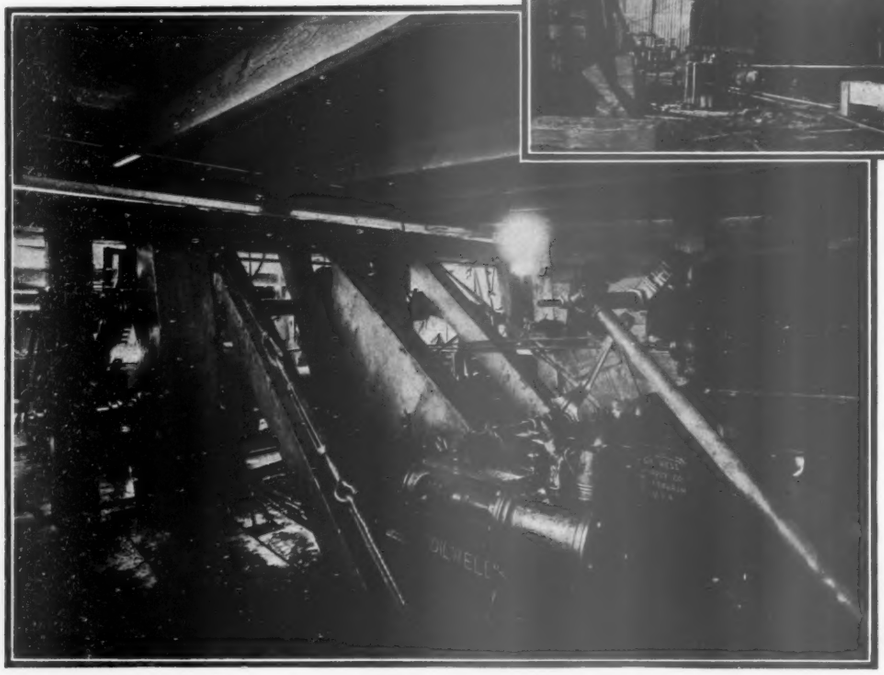


Sinclair—Hartley Number 27. Drilling Contractors, Haury-Manahan & Co., of Enid, Oklahoma. Rotary drilled to 3850 feet; completed with cable tools at 4240 feet.

1 General View of Sinclair Oil & Gas Company's Hartley No. 27. Drilled with "OILWELL" Rotary Equipment.



2 These three "OILWELL" Boilers furnished the steam for Rotary Drilling.



3 This is the "OILWELL" Twin Engine which drove the "OILWELL" Hoist and the "OILWELL" Imperial Rotary.

"OILWELL" ESTD. 1862 TRADE MARK (REGISTERED)

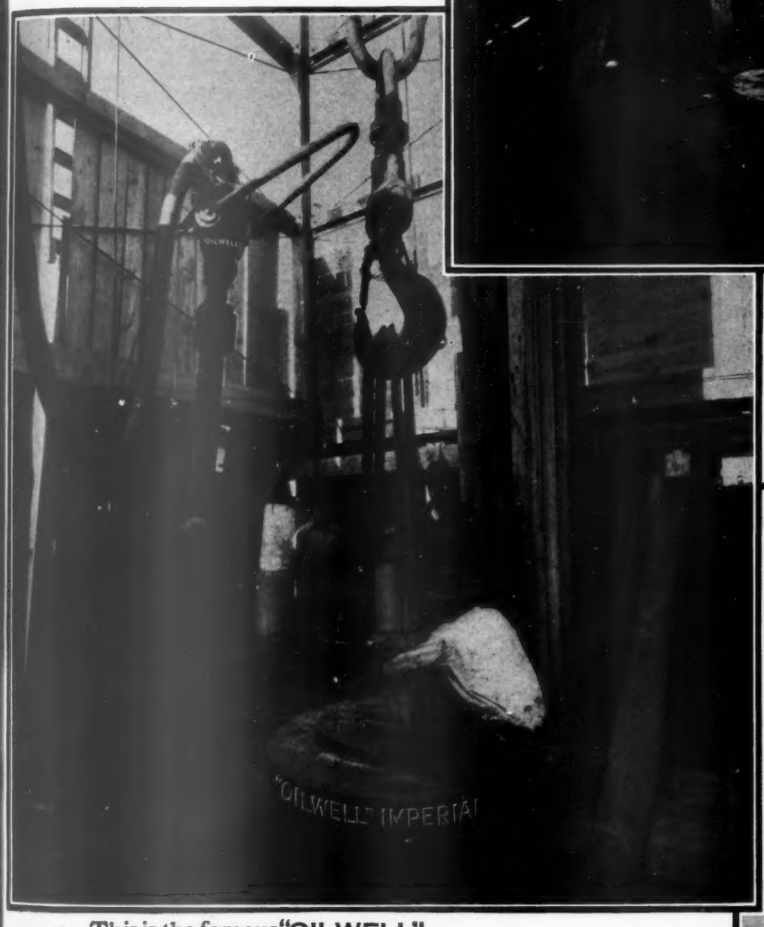
OIL WELL SU

WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQ

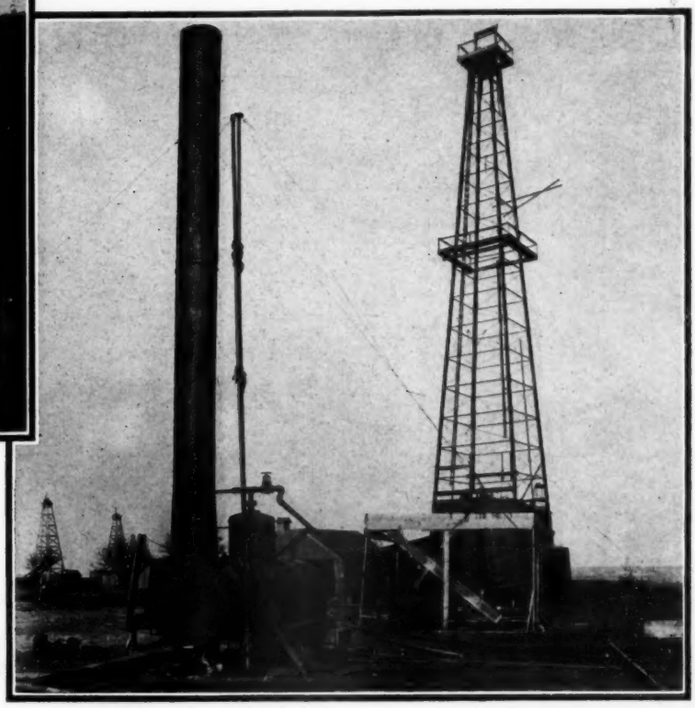
ished the Equipment

Completed March 26th. Produced 25,867 barrels in first 24 hours; 222,547 barrels up to 7 P.M. on April 6th. Largest initial producer ever drilled in Oklahoma.

4 This is the "OILWELL" California Type Imperial Rotary which drilled the well, in connection with "OILWELL" Boilers, Hoist and Twin Engine.



5 This is the famous "OILWELL" Oil Bath Rotary Swivel which carried the "OILWELL" Drill Stem rotated by the "OILWELL" Imperial Rotary.



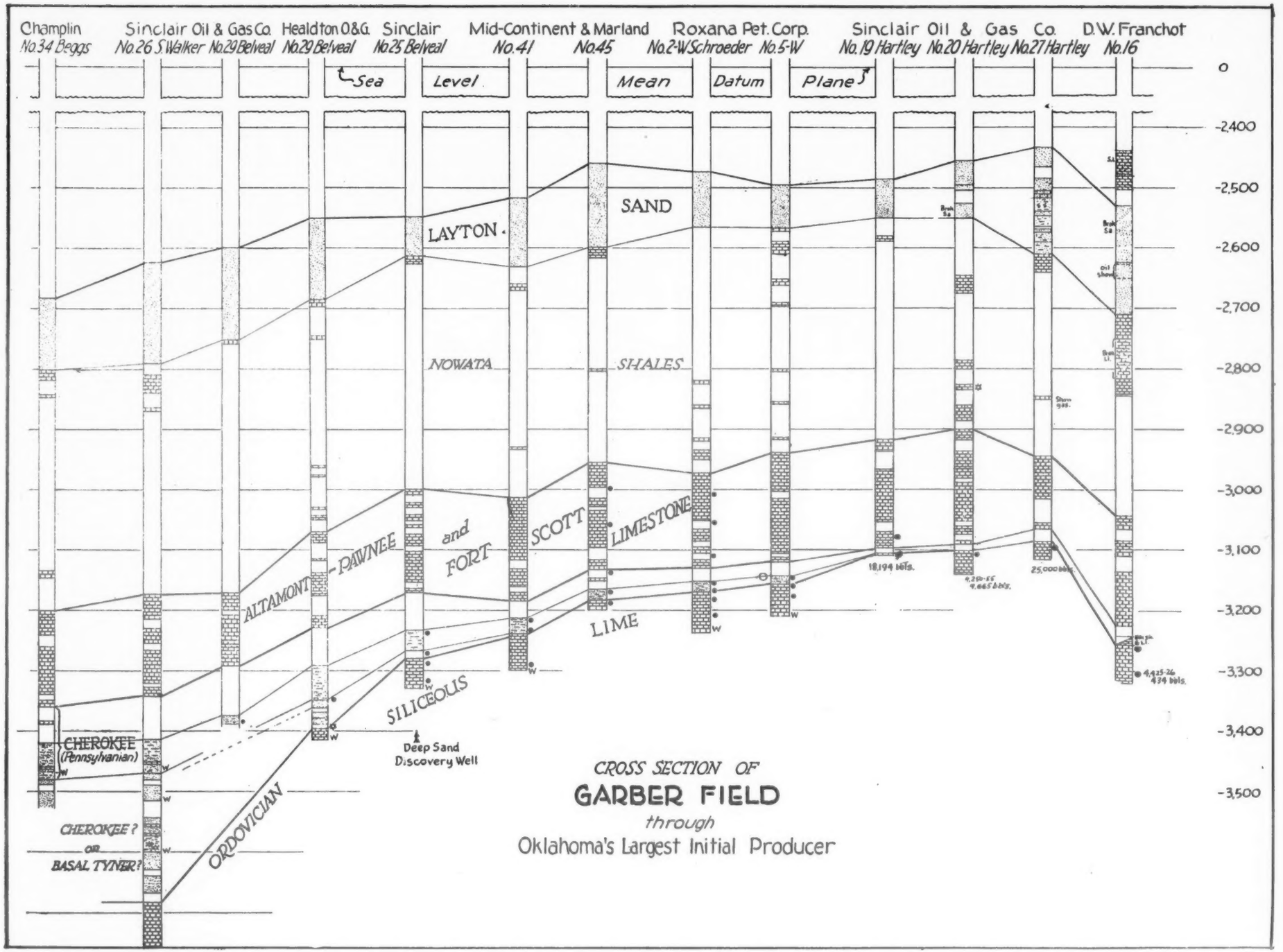
6 This is another "OILWELL" Boiler, which furnished the steam to drill in with Cable Tools.

SUPPLY CO.

"OILWELL" ESTD. 1862 TRADE MARK (REGISTERED)

EQUIPMENT

BRANCH STORES IN ALL OIL FIELDS


Champlin No.34 Beggs
Sinclair Oil & Gas Co. No.26 S.Walker
No.29 Belveal
Healdton O&G. No.29 Belveal
Sinclair No.25 Belveal
Mid-Continent & Marland No.41
No.45
Roxana Pet. Corp. No.2-W Schroeder
No.5-W
Sinclair Oil & Gas Co. No.19 Hartley
No.20 Hartley
No.27 Hartley
D.W. Franchot No.16
Sea Level Mean Datum Plane
0
-2,400
-2,500
-2,600
-2,700
-2,800
-2,900
-3,000
-3,100
-3,200
-3,300
-3,400
-3,500
SAND
LAYTON
NOWATA
SHALES
ALTAMONT
PAWNEE
and
FORT SCOTT
LIMESTONE
LIME
SILICEOUS
CHEROKEE (Pennsylvanian)
CHEROKEE ?
OR
BASAL TYNER?
ORDOVICIAN
Deep Sand Discovery Well
18,194 bbls.
25,000 bbls.
4,425-26 434 bbls.
CROSS SECTION OF
GARBER FIELD
through
Oklahoma's Largest Initial Producer

Leschen's Patent Flattened Strand
"Hercules" (Red Strand) Rotary Line
Used On Rig That Drilled
Oklahoma's Largest Initial Producer

Trade Mark

The fact that a "Hercules" line was used on the rotary that drilled the record-breaking Oklahoma well is simply added proof that "Hercules" Lines are backed by performance.

Patent Flattened Strand "Hercules" (Red-Strand) Rotary Lines are of the right material and of the correct design for best results. They have the necessary strength and endurance, and the keystone shape of the strands enables them to withstand overwinding on the drum. Their service record has proved them safe and economical.

All Leschen Steel Wire Lines are made of acid open-hearth steel wire, and every wire is rigidly tested to make sure that it fully meets every exacting Leschen requirement.

Established 1857

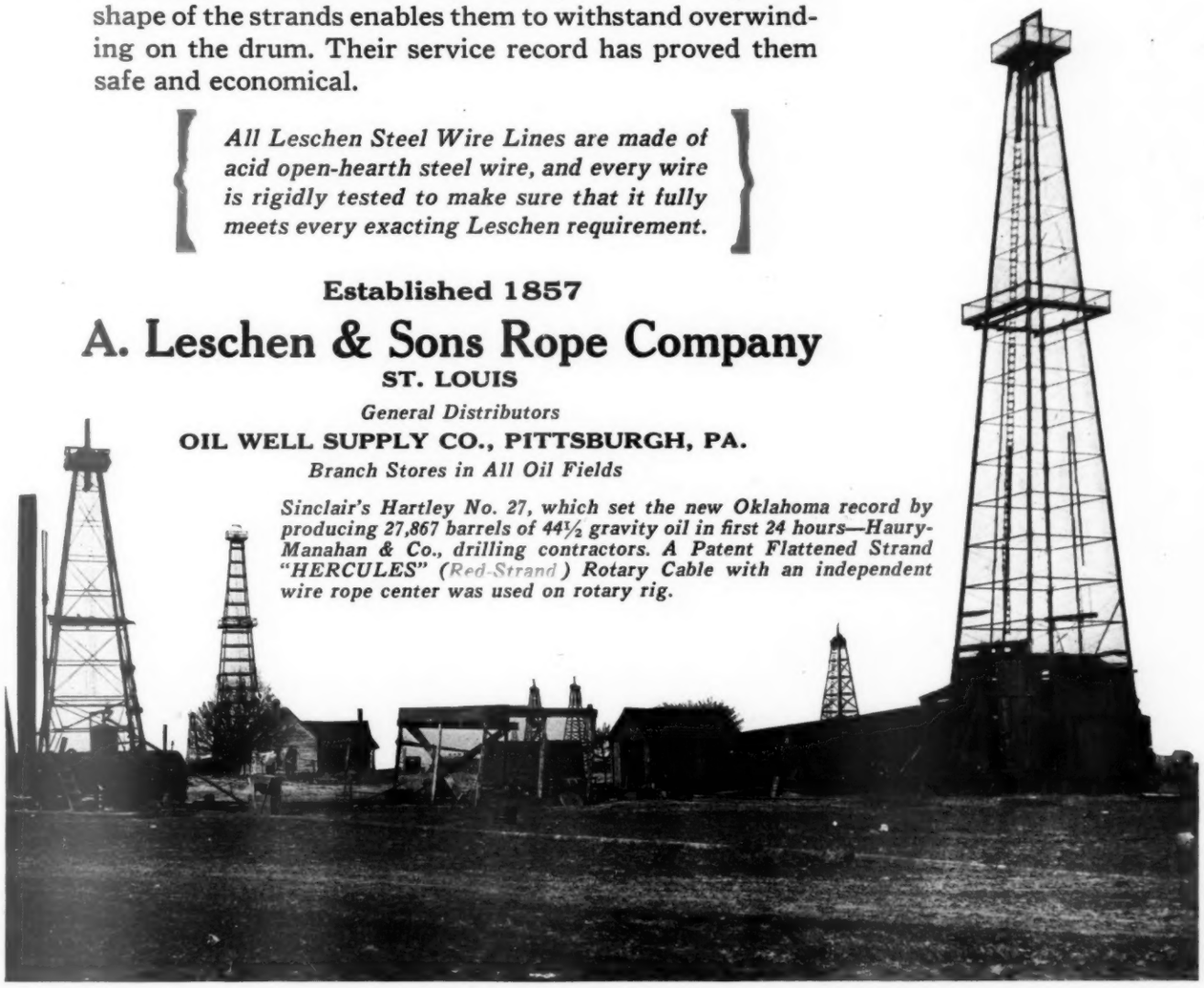
A. Leschen & Sons Rope Company

ST. LOUIS

General Distributors

OIL WELL SUPPLY CO., PITTSBURGH, PA.

Branch Stores in All Oil Fields



Sinclair's Hartley No. 27, which set the new Oklahoma record by producing 27,867 barrels of 44½ gravity oil in first 24 hours—Haury-Manahan & Co., drilling contractors. A Patent Flattened Strand "HERCULES" (Red-Strand) Rotary Cable with an independent wire rope center was used on rotary rig.

Garber Well Greatest in Refining Value

Crude From Gusher of Sinclair Oil & Gas Co. Yields Valuable Products at Minimum Operating Expense

By C. O. Willson

The true magnitude of the No. 27 Hartley well of the Sinclair Oil & Gas Co., located in the Garber Pool in Oklahoma, is not fully realized until analyzed from the standpoint of the refiner and marketer of petroleum products. As is explained elsewhere in this issue, the well the first 10 days of its producing history starting April 2, produced 209,218 bbls. of crude oil from a sand depth of 4,216 to 4,240 feet.

The average daily production of 20,918 bbls. as every producer knows has been exceeded by wells both in the United States and foreign fields. It so happens, however, that the production of a majority of these competitive wells have been low in gasoline content—the principal product desired from crude oil—with no substantial yield obtainable except through expensive processing at refineries.

With a gasoline content of approximately 40 per cent through the simplest type of processing the Sinclair well takes first rank among the gusher wells from the standpoint of the manufacturer and distributor of petroleum products. The accompanying distillation test shows clearly the products obtainable from the Hartley well and at the same time explains why the production at the present time is bringing a posted price of $2.52 per barrel based on a gravity of 42.6 Baume.

The accompanying laboratory report is of value in that it shows the boiling point range of the crude fractions and the percentage of finished product obtainable at a minimum per barrel operating expense. In actual processing at the plants probably no refiner would endeavor to secure just the yields shown in the recapitulation of the laboratory report.

With modern fractionating methods, the gasoline yield would be increased and this in turn would offset the percentage yields of one or more of the remaining products. Distillate and gas oil cuts could easily be obtained through the straight distillation process. At the complete refinery the 39 per cent residuum would give a minimum yield of 5 to 7.5 per cent of finished lubricating oil with a wax content under 1 per cent.

Cracking Possibilities

From the viewpoint of gasoline yield it should be kept in mind that the laboratory test as previously explained is based on yields secured from what is ordinarily termed the skimming process. The production of the Sinclair well will eventually find its way to refiners with cracking processes equipped to secure the maximum amount of gasoline justified by market conditions in regard to crude and refined products.

Taking 40 per cent as the gasoline yield secured by the skimming operation, it is conservatively estimated that an additional 30 per cent is obtainable by cracking the heavy residuum including gas oil and certain fractions of the kerosene cut. Based on results which have recently been obtained with other crudes at a few refineries there is a possible commercial yield of 85 per cent motor fuel from the crude of the Garber well. This maximum yield would be obtained in a nonresiduum operation in which gasoline and coke would be practically the only products obtained in the refinery processing.

The yield of 70 per cent gasoline would not necessarily reduce the percentage of kerosene obtained and a substantial part of the lubricating oil content of the crude could also be recovered.

Considering first the yields from skimming and cracking the Sinclair well based on a 10-day average daily production of 20,921 bbls. would produce 14,634 bbls., or 615,048 gallons of gasoline daily. The average refiner usually compelled to secure his crude supply from one hundred to several thousand wells scattered over wide areas will testify to the advantage of having a crude supply of that magnitude from one well.

The average production of the more than 57,000 wells in Oklahoma alone is approximately 8 bbls. per well. Based on this average a refiner running 5,000 bbls. of crude to stills daily would be compelled to have pipe line connections to 625 wells. This contrast can be further emphasized by considering the production of one lease producing from the Bartlesville sand in the Chelsea district (Rogers County) Oklahoma. The lease which is regarded as the average producing property of that area, has 24 producing wells. The production for these wells for 11 years totaled 201,988 bbls., or less than the first 10-day production of the Garber well.

Gasoline Content

Perhaps the gasoline content of No. 27 Hartley can best be visualized when considered from the standpoint of the gasoline consumer. The daily average consumption of gasoline in Oklahoma last year was slightly in excess of 500,000 gallons daily. With a gasoline content of 615,048 gallons the Garber well for its first 10-day production would exceed the gasoline requirements of the State in which it was discovered by 20 per cent.

Considering some of the states where the gasoline consumption is less than in Oklahoma, the marketing importance of the Garber well is still more apparent. Based on reports for 1925 the combined gasoline consumption of the states of Montana, Idaho, Utah, Wyoming, Nevada, New Mexico and Arizona was 184,833,000 gallons, or 506,391 gallons daily. Based on this report the well for the 10 days would have more than satisfied the requirements of seven states constituting 25 per cent of the entire area of the United States.

The average gasoline consumption of an automobile per year for the entire country is roughly 500 gallons. This means that the production of the Garber well for 10 days would furnish the gasoline requirements of 12,300 automobiles for one year.

Kerosene Output

From the standpoint of the kerosene market the yields of the Garber well are equally as important. Based on a 17 per cent recovery the daily output of the refinery would be 149,352 gallons. This is more than the daily kerosene consumption of the states of North Dakota, South Dakota and South Carolina, which totals 143,824 gallons daily. It also happens that the gasoline requirements of these three states based on 1925 data was 616,994 gallons daily. This means that the well satisfied both the gasoline and kerosene requirements for the 10-day period.

In regard to lubricating oil accurate estimates in regard to yield are not available. The yield would depend largely on the quality of stock desired. The crude contains the constituents necessary to refine the best quality of Mid-Continent bright stock or neutral oils.

Based on a minimum yield of 5 per cent the production of the well, the lubricating oil output would cover a wider marketing area than it does in gasoline and kerosene. The experience of many distributors shows that their lubricating oil sales for automobiles bears the relationship of 25 to 1. That is, 25 gallons of gasoline is sold for each gallon of lubricating oil.

Based on this 25 to 1 ratio the Garber well during the 10-day production lubricated 78 per cent more automobiles that it supplied with gasoline. This means that it would not only satisfy the gasoline and kerosene requirements of the states of North Dakota, South Dakota and South Carolina, previously mentioned, but would at the same time furnish the lubricating oil, and there would then be a surplus which would lubricate all the automobiles in Nebraska.

Other Products

The statistician might continue the effect of the well on the distillate, gas oil and fuel oil markets. He will find that if a 5 per cent distillate cut was taken a daily yield of 43,925 gallons would be obtained. This would satisfy the re-

(Continued on Page 124)

MARKETING IMPORTANCE OF WELL

The No. 27 Hartley of the Sinclair Oil & Gas Co., producing 20,219 bbls. daily, the first 10 days after its completion is the oil industry's greatest well from the standpoint of the marketable products obtained by refining.

Based on a 70 per cent gasoline recovery from skimming and cracking processes in refining the well for 10 days produced more gasoline than was consumed during the same period in seven states of the Rocky Mountain section which constitute 25 per cent of the entire area of the United States.

The daily gasoline obtainable from the crude furnished all the gasoline, kerosene and lubricating oils consumed in the states of North Dakota, South Dakota and South Carolina with a surplus of lubricating oil sufficient for the state of Nebraska.

Enough gasoline is obtainable from the 10-day output of the well to furnish the motor fuel required by 12,000 automobiles for one year.

The daily fuel oil residuum left after the gasoline and kerosene is recovered in the straight distillation process without cracking is equivalent to a coal mine producing better than 2,000 tons of coal daily.

This fuel oil residuum would furnish fuel oil for 100 railroad locomotives each traveling 326 miles daily.

DISTILLATION TEST DEEP SAND GARBER WELL

The following distillation test of the No. 27 Hartley of the Sinclair Oil & Gas Co., located in Garber Pool of Oklahoma, was made by the Tulsa Laboratories, Inc., of Tulsa, Okla. This laboratory test was made after the well has been flowing for 10 days. The gravity of the well was slightly higher based on tests made at the well the third day after completion. Sand depth was 4,216-40 feet.

1,000 Cubic Centimeter Distillation

Gravity 42.6 Be. API Per Cent Off	Temp. Deg. F	Gravity API. Be.
10	216	75.5
15	246	63.7
20	264	59.3
25	294	57.6
30	322	53.6
35	356	50.7
39	390	48.0
	Cut.	
43	420	46.3
	Cut.	
48	456	44.0
53	492	42.0
58	534	39.2
60	564	XXX
	Cut.	
39	Fuel bottoms.	
1%	Loss.	
100%		

Recapitulation

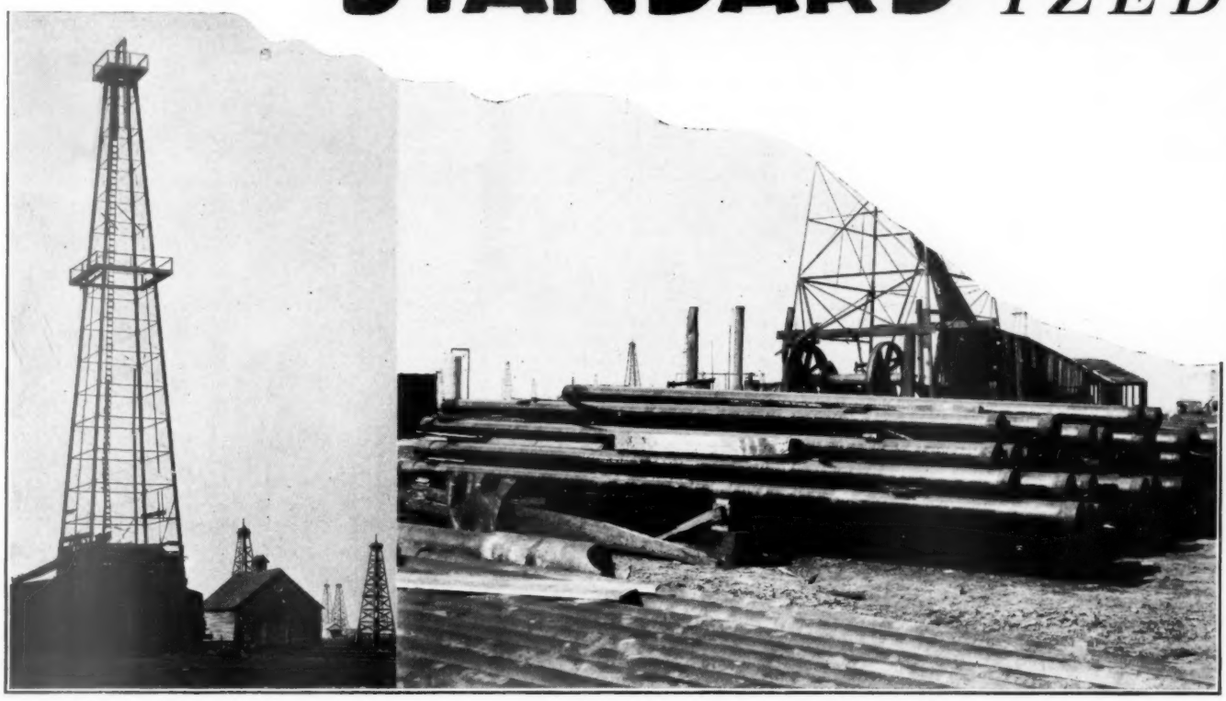
39%	60.1 Be. gasoline, I.P. 116° F., 20% over at 200° F., 50% at 256° F., 90% at 366° F.; EP. 440° F.; 2% loss.
4%	46.3 Be. naphtha.
17%	41.3 Be. kerosene.
39%	28.7 Be. fuel oil, pour test 35° F.
1%	Loss.
100%	

EQUIPMENT USED IN WELL THAT SHATTERED A PRODUCTION RECORD

Following is a list of the principal equipment used in drilling the Sinclair Oil and Gas Co.'s No. 27 Hartley, in the Garber Field, Oklahoma, which produced 25,867 bbls. on its first day's gauge, together with the companies supplying the material:

Derrick—McGraw, Baughman & Bearly.
Crown block—Lucey Manufacturing Co.
Rotary—Oil Well Supply Co.
Engine and draw works—Oil Well Supply Co.
Ideal slush pumps—Union Tool Co.
Wigle hook—Union Tool Co.
Traveling block—Boykin Machine & Tool Co.
Rotary hose—Hewitt Rubber Co.
Rotary wire line—A. Leschen & Sons Rope Co.
Slips—The W-K-M Co.
Tongs—Dunn Manufacturing Co.
Elevators—Wilson & Willard Co.
Drill pipe—National Tube Co.
Rotary bits—Hughes Tool Co.
Boilers (3)—Oil Well Supply Co.
Gas burners—"Long Horn" brand.
Bull wheels and calf wheels—Bradford Rig & Reel Co.
Rig irons—Bradford Rig & Reel Co.
Rig irons—Oklahoma Tool & Supply Co.
Engine—Ajax Iron Works.
Belting—Rossendale-Reddaway Co.
Cable tools and bailer—Oil Well Supply Co.
Drilling cable—Wickwire-Spencer Steel Co.
Boiler—Oil Well Supply Co.
"Crotto" wire line clamps—Western Supply Co.
Steel tankage—Black, Sivalls & Bryson.
Temper screw—Burns Tool Co.
Cordage—Plymouth Cordage Co.
Casing—Standard Seamless Tube Co.
Casing elevators—Bovaird Supply Co.
Control head—Oil Well Improvements Co.
Oil Saver—Oil Well Improvements Co.
Bit-dressing crane—Chisholm-Moore Co.
Hoist—Yale & Towne Manufacturing Co.
Water gauge cocks—Smith Separator Co.
Generators and flood lights—Pyle-National Co.
Oil and gas separators—Smith Separator Co.

STANDARDIZED



Sinclair's Hartley No. 27 *Standard Seamless Casing ready for the casing crew*

Oklahoma's Largest Initial Producer

Sinclair's No. 27 Hartley Garber Field

Cased with two strings of Standard Seamless Tube Co.'s high carbon seamless casing:—

8¼"—32 lb.— 8 thd., ¾ taper—*3812* ft.
6⅝"—26 lb.—10 thd., ⅜ taper—*4216* ft.

Advantages over welded casing:

40% increase in pulling out strength (strength in joint).
30% increased resistance to collapse.
Greater accuracy in thread shape, size and taper due to better machineability of high carbon steel.
Can be rerun many more times without rethreading.
Better roundness.
Double the resistance to deformation in handling.

Casing Drill Pipe
Tubing Still Tubes

STANDARD SEAMLESS TUBE COMPANY

313 6th Ave., Pittsburgh, Pa.

BRANCH OFFICES:

295 Broadway, New York 710 Mid-Continent Bldg., Tulsa, Okla.

Deep Tests Opened Vast Stores of Oil

Faith of Oil Producers and Recent Aid of Science Has Been Well Rewarded in Other States Than Oklahoma

By Andrew M. Rowley

Deeper drilling of wells is one of the most important subjects confronting the petroleum industry in different sections of the United States today. The vast improvements which have been made within the past few years in drilling equipment, machinery, derricks and other material necessary and in the methods employed in sinking a well far below a mile in depth, permits the oil companies now to figure on future reserves of crude oil from horizons either unthought of or considered impossible of attainment only a few years ago. The Sinclair Oil & Gas Co.'s No. 27 Hartley in the Garber Field, the Mid-Continent's greatest initial producer of high gravity crude, is a result of deeper drilling practiced in the Mid-Continent area but a comparatively short time.

In practically every area west of the Mississippi River views regarding the productivity of different oil fields are being changed by reason of the results obtained from deep tests drilled by individuals and oil companies who believed crude would be found far below older producing sands and who were financially able to back their belief with actual tests. Development programs of many of the larger companies are being planned with a view of drilling deeper in many present producing fields, while acreage is being procured both inside proven areas and on the edges by concerns who believe commercially productive horizons will be found below present producing levels.

"Big Company Proposition"

Deeper drilling has had a twofold effect upon oil field operations. First has been the large production procured in different fields in widely scattered sections of the country; and, secondly, it has served to confine operations to a smaller number of concerns owing to the vast financial resources necessary to drill wells below 4,000 feet or, as in the case of E. J. Miley's No. 6 Athens in California, to 7,691 feet. Few individuals and only a comparatively few of the smaller oil companies are financially able to expend from $75,000 to $150,000 in drilling one well, with a good chance that that well will not be commercially productive.

The importance of deeper drilling to the entire industry has been demonstrated time after time during the past two or three years and has been emphasized again during the past few weeks. The situation in a number of sections of the country could be changed were the large companies to engage in an intensive deeper drilling campaign to sands below present producing horizons—sands to which test wells have already been sunk and which showed the deeper horizons were capable of producing oil in commercial quantities.

California Deep Sands

An outstanding example of this situation is the Inglewood Field in California where the Associated Oil Co. recently completed its No. 2 Vickers, producing 1,500 bbls. daily of 24 gravity crude from a deeper zone than the remainder of the production of the field is being produced. It has been estimated the production of this field alone could be increased 25,000 bbls. daily by the middle of July were the different companies holding acreage there to drill wells to the deeper zone. Operators in other fields in California are confronted with the problem of deeper drilling, also, as it is believed good oil sands will be found underlying present producing horizons. Dominguez is an example. Deep wells have been drilled off the structure there but operators feel fairly sure production could be procured at Dominguez under the present producing level.

The Ventura Avenue Field in California shows how production may be increased by drilling deeper, especially after the first sands show a decline. The first producing zone there was found at about 3,500 feet; a second at about 4,000 feet and another, still undeveloped, at 5,500 feet.

Deep Discoveries in Rockies

In the Rocky Mountain area, the Lakota sand underlying the second Wall Creek has great possibilities. The Midwest Refining Co. has drilled a number of wells to this sand and has found big production. These wells are shut in as it is felt the production is not needed at this time, but it is known the sand is there and that it is highly productive. The first Wall Creek sand in the Salt Creek Field is found at 1,200 feet, the second at 2,000 feet and the Lakota at a depth of 900 feet below the second Wall Creek. In that area, the Sundance sand has been found at 3,400 feet and the Tensleep sand at 4,000 feet. At present no production is being taken from below the second Wall Creek sand, however.

Practically all of the production of Montana comes from the Sunburst and Cat Creek Fields. In both of these the big production now is being procured from sands found under the first producing horizons discovered.

Gulf Coast Still Uncovers Them

Just about the time the Mississippi lime was penetrated in Oklahoma and the Wilcox sand uncovered, operators in the Gulf Coast region of Texas were proving up deeper sands in that territory. This was 13 years after the opening of the Spindletop Field. Sour Lake was the first of the deeper sand fields and in it sands from 2,400 to 2,600 feet in depth were uncovered.

Previously production in the coastal region was from caprock from 900 to 1,100 feet or from shallower sands above the caprock.

The Humble Pool was the next deep sand producer, operations there starting on the east side in 1915. The sands were from between 2,800 to 3,200 feet. The Goose Creek Pool was the next to be tested for deeper sands, with marked success. Deep pay sands were found there all the way from 2,200 to 4,600 feet, and some even at a lower level.

The Orange Pool has been a deep sand proposition almost from the beginning. The best wells are from 4,600 to 5,000 feet. The West Columbia was another successful deep sand pool, especially on the Japhet 20 acres and adjoining it on the east side. The pay ranged from 3,000 to 3,800 feet.

The late pools, such as Big Creek, Blue Ridge, Pierce Junction, South Liberty are all deep sands, ranging from 2,650 to 4,200 feet. Very little of the production comes from above 3,000 feet.

Boling is a deep sand pool to date, the average depths of the few wells there being between 2,950 and 3,350 feet. Much deeper holes are now being drilled, according to the weekly drilling review.

The Lockport district, near Lake Charles, south Louisiana, is another deep pay section. It was opened in September, 1924, the first well flowing 3,000 bbls. initial at 3,875 feet. Subsequent completions have been at 4,500 to 4,900 feet.

The bulk of the production in the Vinton Pool comes from sands at 2,400 to 2,650 feet.

Science Aids the Operator

Only limited efforts were made during the first decade in the petroleum history of the coastal area to find sands below the caprock and shallow strata. Salt water strata has been found at 1,800 to 2,400 feet and operators believed it was useless to drill below those depths. Geology was not as closely connected with the producing business then as it is today, and the drilling equipment suffered by comparison. Deeper holes meant heavier rotary rigs and drill pipe to stand the strain. It was found the water stratum could be successfully cut off and manufacturers responded to the demand for heavier drilling equipment. As a result, there ensued a deep drilling campaign that opened the east side of the Humble Pool, developed a score of lower sands in the Goose Creek, Hull and Orange Pools and more recently a deep sand off the southeast flank of the Spindletop Pool which recently furnished a 6,000-bbl. well from a sand 220 feet below any other sand in the pool.

Look for Even Deeper Pays

Managers of the production departments of the major companies and the geological staffs believe still deeper sands will be found in the Gulf Coast area during the next decade. To reach these will require still heavier drilling pipe and rotary rigs and improved pumping equipment to lift the oil when the wells quit flowing. These problems finally resolve themselves into a question of costs and will eventually be solved. Meantime every section of the coastal plains belt is being explored geophysically with the seismograph, torsional balance or both, followed by the drilling of formation tests with gasoline rigs to a depth of from 800 to 1,200 feet. If this exploration work denotes a saline uplift, big blocks of acreage on and around the dome is secured and competitive drilling of offset wells is thus eliminated.

In other words it now seems a policy to make large original investments in acreage to be held and developed slowly instead of expending vast sums drilling offset wells after a dome has been defined and production developed on one or more flanks.

It is predicted the deep productive sands of the future will be between 5,500 and 6,500 feet, and there are those who believe oil will be found even deeper.

In addition to accumulating acreage around the new domes and prospects, the major companies are preparing for the future by taking up acreage located on the outskirts of the older pools on which deeper holes will be drilled as the need becomes pressing.

Flooded Market From Deep Sand

Deep sand discoveries were the feature of the work done in north Louisiana and south Arkansas last year. The discovery of an oil sand in the Smackover Field in Arkansas about 300 feet below the known pay sand, the Nacatoch, opened a flood of production that was largely instrumental in breaking all annual production records last year, pouring in nine months about 45,000,000 bbls. of oil on the market the industry did not know it would ever get. In Louisiana, new producing sands were uncovered in practically every field, but they did not produce enough to have any influence on the market, although the discovery of oil in the Trinity sand in the Pine Island district was regarded as one of the most important of the year because of the fact that the Trinity underlies such a vast territory in east Texas, Arkansas and Louisiana making it seem possible that it contains a great store of petroleum which eventually will be recovered. The Dixie Oil Co. brought in the first oil well in the Trinity sand at a depth of 3,747 feet in its No. 53 Robertshaw in Section 13-21-15, Caddo Parish. The discovery of the deeper Smackover, Arkansas, pay was made by the Lion Oil & Refining Co. in its No. 5 Graves, in Section 3-16-15, Union County. The sand was named the Graves sand.

The faith of the Lion Oil & Refining Co.'s production men in the possibilities of the sands underlying the Nacatoch in the Smackover Field resulted not only in a big total of production, but in a number of very large individual producing wells, some of which actually crowded the big Garber wells in point of initial production, although the gravity of the oil was over 50 per cent lower and its value proportionately less.

Colorado's Deep Fields

Colorado is one of the oldest oil producing states in the Union, but all the production it yielded for many years was from shallow sands and shale until in January, 1924, when the Craig Field in Moffat County was opened after The Texas Company and Trancontinental Oil Co. had drilled a test to the 3,800-foot horizon. Later the Union Oil Co. opened a field in Larimer County below 4,200 feet and very recently in Larimer County the Wyoming Illinois Oil Co. developed a showing of oil in Lakota sand at 4,906 feet in No. 1 Leroy, in Section 30-10-68. This well was not completed when this was written.

Very Deep Failures in the East

The eastern oil and gas operator has not been idle in the matter of deep drilling, and until the completion of the Miley well in the California fields the easterners held the record for deep drilling, but the results were not satisfactory.

For 25 years the subject of a deep test was discussed in northern Pennsylvania and a dozen years ago a deep well was started in the Bradford Field which was sent down more than a mile and was abandoned only because the bit would make practically no impression on the hard Niagara lime. Deep wells were drilled in the Kane and the Tidioute Fields and one is now in progress in western New York, near the town of Randolph in search of gas. A well was drilled to 7,248 feet in Washington County, Pennsylvania; to 7,386 feet in Harrison County, West Virginia, and another to 7,396 feet, also in Harrison County. The deepest well in the east was the Hope Natural Gas Co.'s Lake test in Marion County, West Virginia, which was sent down to 7,579 feet. A gas production of 550,000 cubic feet a day was found at 7,430 feet in a well drilled near Ligonier, east of Pittsburgh.

No oil in commercial quantities was ever found in the very deep tests in the eastern fields.

A deep test in Clark County, Kansas, was abandoned at 5,679 feet last year and the deepest well between the Mississippi River and the California fields was a dry hole in Nebraska, some years ago, which was drilled to 5,697 feet.

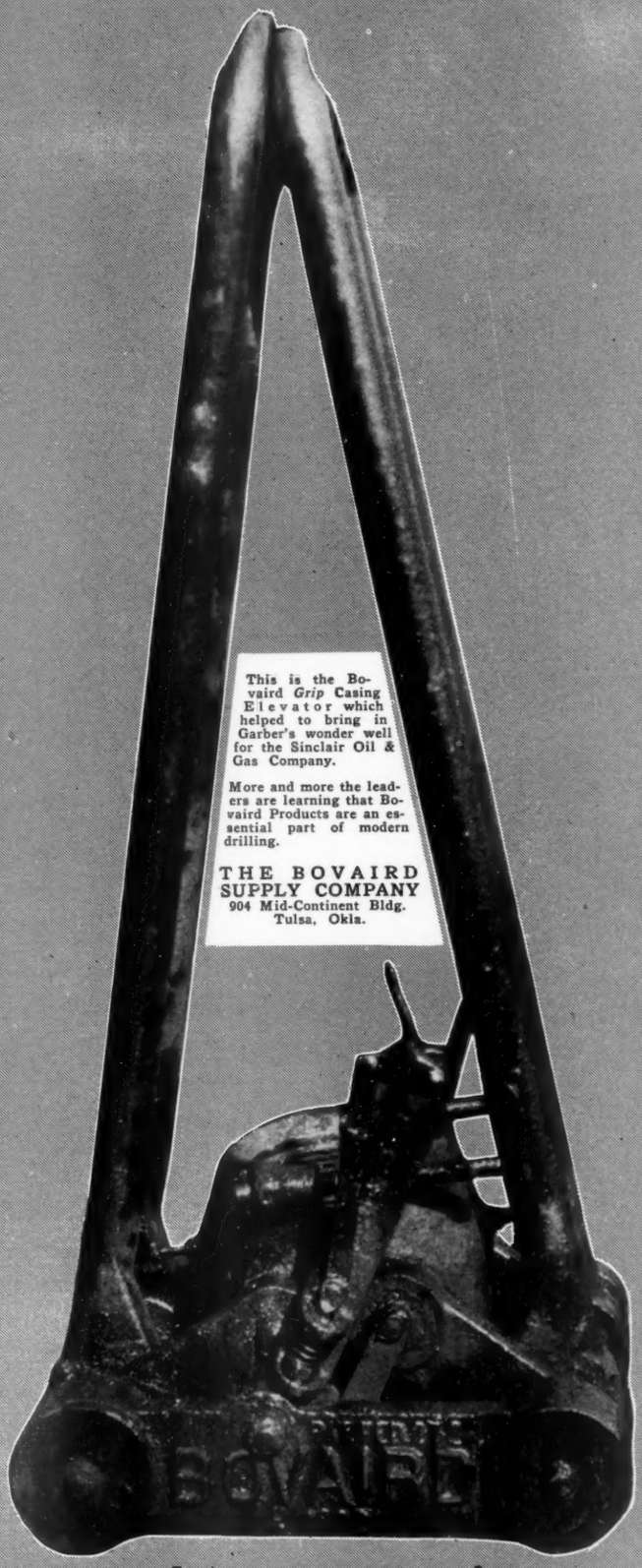
JUST HOW BIG IS A 26,000-BBL. WELL?

(Continued from Page 76)

drilled last year in Venango and Clarion Counties, Pennsylvania,—and if they continue to have the success they accomplished in 1925,—it will take them until 1972 before they accumulate a total of 26,000 bbls., in initial production. They will have to drill 17,333 oil wells to do it, which will consume 47 years and at the end of that, perhaps the sophisticated people of 1972 will be saying: "Oh, yes! I recall having read that people once used a fuel called gasoline in a vehicle called an automobile."

So you can see, gentle reader, that a 26,000-bbl. well is some well. Yet one cannot but wonder if Harry Sinclair got 2,586.7 times the kick out of it that Wat. Young does out of one of the South Penn's 10-bbl. completions on the Bingham tract, and to conclude that if he did it must have been very considerable of a kick.

With the Record-Breakers!



This is the Bovaird *Grip* Casing Elevator which helped to bring in Garber's wonder well for the Sinclair Oil & Gas Company.

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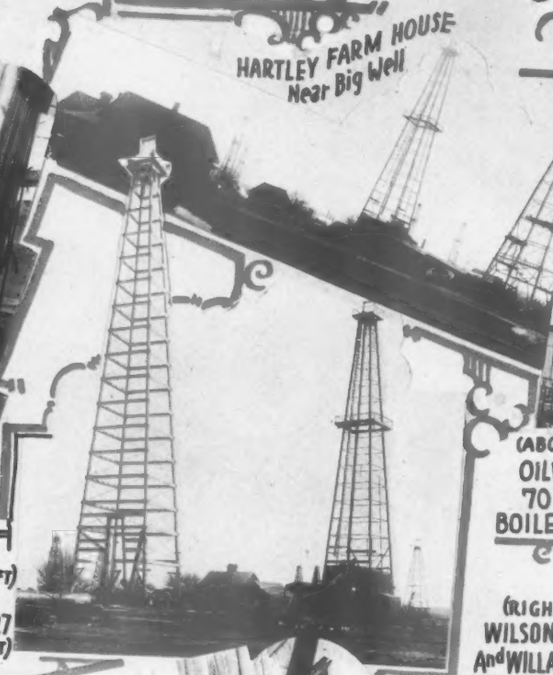


HARTLEY FARM HOUSE Near Big Well

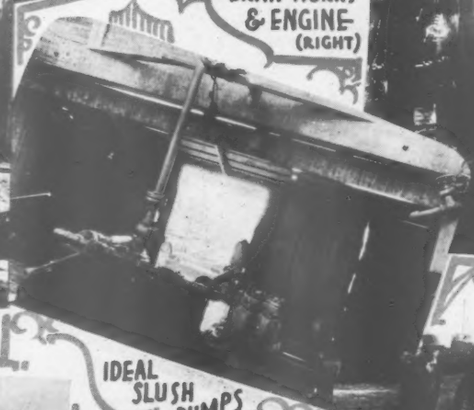
NO. 28 HARTLEY (LEFT) Rigging to offset NO. 27 (RIGHT)

(ABOVE) OILWELL 70 H.P. BOILERS

(RIGHT) WILSON And WILLARD ELEVATORS And WIGLE SPRING CASING HOOK

DUNN TONGS & W.K.M SLIPS IN ACTION (RIGHT)

BUCKING IN DRILL PIPE WITH PLYMOUTH CORDAGE

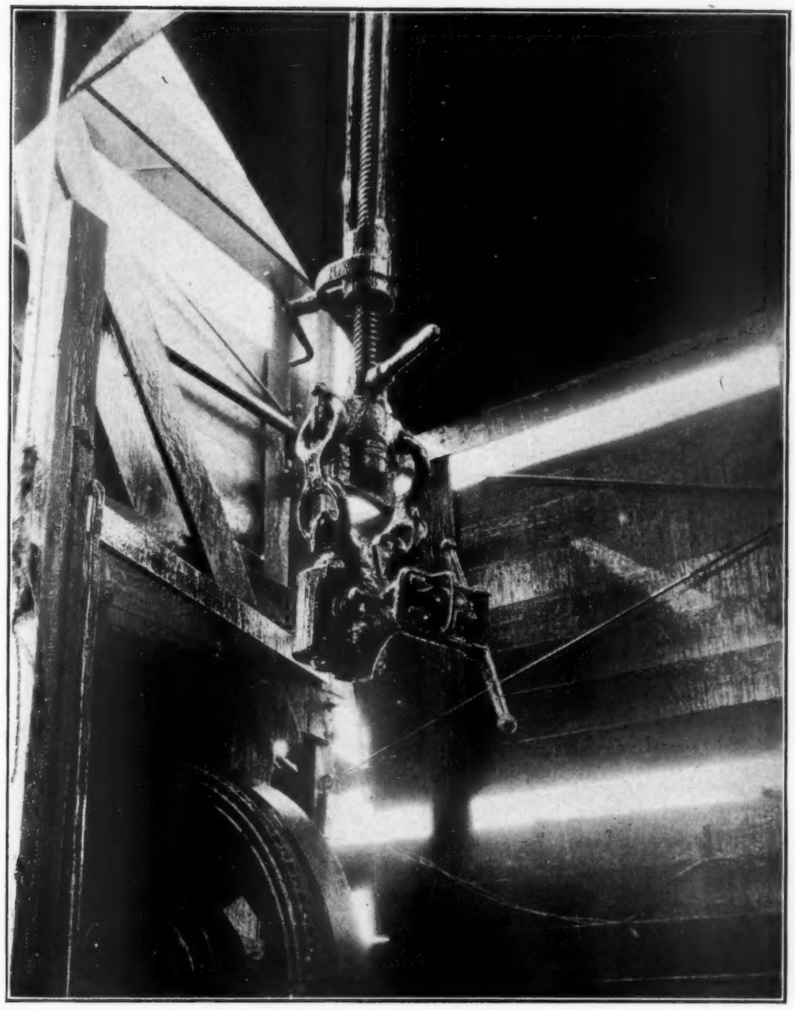


OILWELL DRAW WORKS & ENGINE (RIGHT)

SINCLAIR OIL & GAS CO'S. CAMP IN GARBER FIELD

IDEAL SLUSH PUMPS

ENROUTE TO TAKE THE ABOVE PICTURES (RIGHT)



Where Only the Best Was Used

ON Oklahoma's Greatest Gusher, the Sinclair Hartley No. 27, a CROTTO Three-Jaw Wire Line Drilling Clamp was used, because it could be depended upon to save time and eliminate danger of injury to the wire line. Its exclusive features are making the CROTTO Drilling Clamp the favorite everywhere. Your Supply Store has it.

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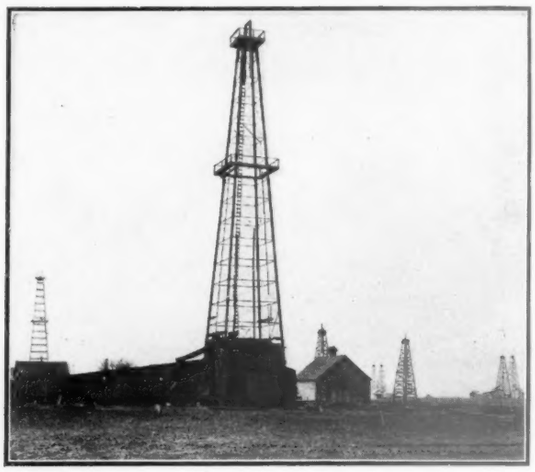

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WAS USED TO DRILL

OKLAHOMA'S MONARCH WELL

The Monarch derrick on the Sinclair Hartley No. 27, Oklahoma's Greatest Gusher, is only one of 55 Monarch derricks in the Garber Field.

Monarch Means Dependable Derricks—the reason *why* it was used on this well and on scores of others.

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Turnbuckle Drilling Derricks
Steel Crown Blocks
Steel Pitmans

TWELVE YEARS OF SCATTERED DEEP DRILLING

(Continued from Page 77)

in Section 9-22-10, good for 8,000 bbls., one by the Gilliland Oil Co. that started at 6,000 bbls.; the American Pipe Line Co.'s 7,000-bbl. well in Section 18-27-8, which was afterwards taken over by the Gypsy Oil Co. and McMan Oil Co. The Barnsdall Oil Co. got a 7,000-bbl. well in Section 14-25-11, and Graham & Bird finished one in Section 25-23-8 that was good for 8,000 bbls. the first day. The Atlantic Oil Producing Co. finished a 10,000-bbl. deep one in Section 1-22-9 and there were a number of other notably large Wilcox sand wells drilled in the county in the past few years.

It Made Okmulgee County

Okmulgee County never really came into its own until the discovery of the Wilcox sand in Township 14-11. Okmulgee County is one of the oldest of the producing counties in the State, but it did not get into the producing class occupied by the counties of Osage, Creek and Carter until after the discovery of the Youngstown or Dutcher sand in 1918. The Okmulgee Oil & Refining Co. opened a great little pool in Section 25-14-11 that year, but it was confined to a small area. Tests were started on all sides of it and when the Youngstown sand was found dry or was missed altogether, deeper drilling developed production in the Wilcox sand and Black & Simons, Waite Phillips, the Riverland Co. the Amerada Petroleum Corp., The Texas Company and others brought in wells of 2,000 to 3,000 bbls., which became noted not so much for their initial production as their splendid staying qualities.

The great success of operators in Township 14-11 caused oil men and oil companies to fairly comb Okmulgee County with tests, and many good pools were developed in the Dutcher sand, while other Wilcox areas were developed, which, however, did not come up to the pools in 14-11. Drilling to depths below 2,500 feet became so common in Okmulgee County that it got to be taken as a matter of course and this led to the opening of prolific pools in Okfuskee County and in Seminole and Hughes Counties. That part of the great Okmulgee Field made up for the dwindling production in Okmulgee County after the flush days were over. When the pools in the more southerly counties were pretty fairly outlined, operators became possessed with an urge to go deeper to find the Wilcox sand—because the Wilcox, which lay at 2,750 feet in Township 14-11, dropped off to more than 4,000 feet in Seminole County and was found below 5,200 feet in one test in Hughes County. One of the richest deep sand pools in the State was opened early this year in the Wewoka Field by the Magnolia Petroleum Co. in Section 5-7-8 and on April 10 this deep horizon was yielding 25,400 bbls. from 6 wells, and there were 37 wells drilling, rigs up and locations made on that date. It is the most prolific new pool of the year.

In the Western Country

Another old field in which big production was recovered by drilling to the Wilcox sand was in the Ingalls Pool in Township 19-4, west of Yale, in Payne County, where the Olean Petroleum Co. found the Wilcox pay at 4,000 feet.

Tonkawa's Deep Gushers

Two years ago when the Tonkawa Field was rapidly declining in production and the output had fallen from a peak of 112,232 bbls. to 35,000 bbls., T. B. Slick opened the Wilcox sand to production with a well in Section 35-25-1w, which started a development that proved up the best part of 640 acres and furnished some of the largest wells ever drilled in the State. The Wentz Oil Corp.'s 45 McKee, in Section 34-25-1w, which started at 8,350 bbls. and increased to over 14,000 bbls. a day, was the largest well in the field, but there were a number of other very large initial producers, notably McCaskey & Wents' No. 18, 4,306 bbls.; Amerada Petroleum Corp.'s No. 38 Woods, Section 34, 4,150 bbls.; Blackwell Oil & Gas Co.'s No. 1 McDaniels, 6,950 bbls.; Comar Oil Co.'s No. 1 Endicott, Section 34, 6,393 bbls.; Nos. 5, 6 and 7 Endicott, averaging 5,500 bbls. each; the Pennok Oil Co.'s No. 5, 4,700 bbls.; No. 3, 4,500 bbls.; Comar Oil Co.'s No. 1 L. Endicott, 6,473 bbls.; Gypsy Oil Co.'s No. 83 Clark. Section 3-24-1w, 6,115 bbls.; No. 85, 5,238 bbls., and Nos. 81 and 84, which averaged 4,350 bbls. each; T. B. Slick and the Comar Oil Co.'s No. 8 L. Endicott, 4,000 bbls. The average initial production of 48 Tonkawa deep sand producers was 3,700 bbls. per well, but wells started below the 2,000-bbl. mark are not included in the list. The tremendous deep sand production sent the total production of the field upward until it reached a total of 111,960 bbls. or nearly equal to its former peak of production from the upper sands, after which it began to decline.

True to Type in Garber

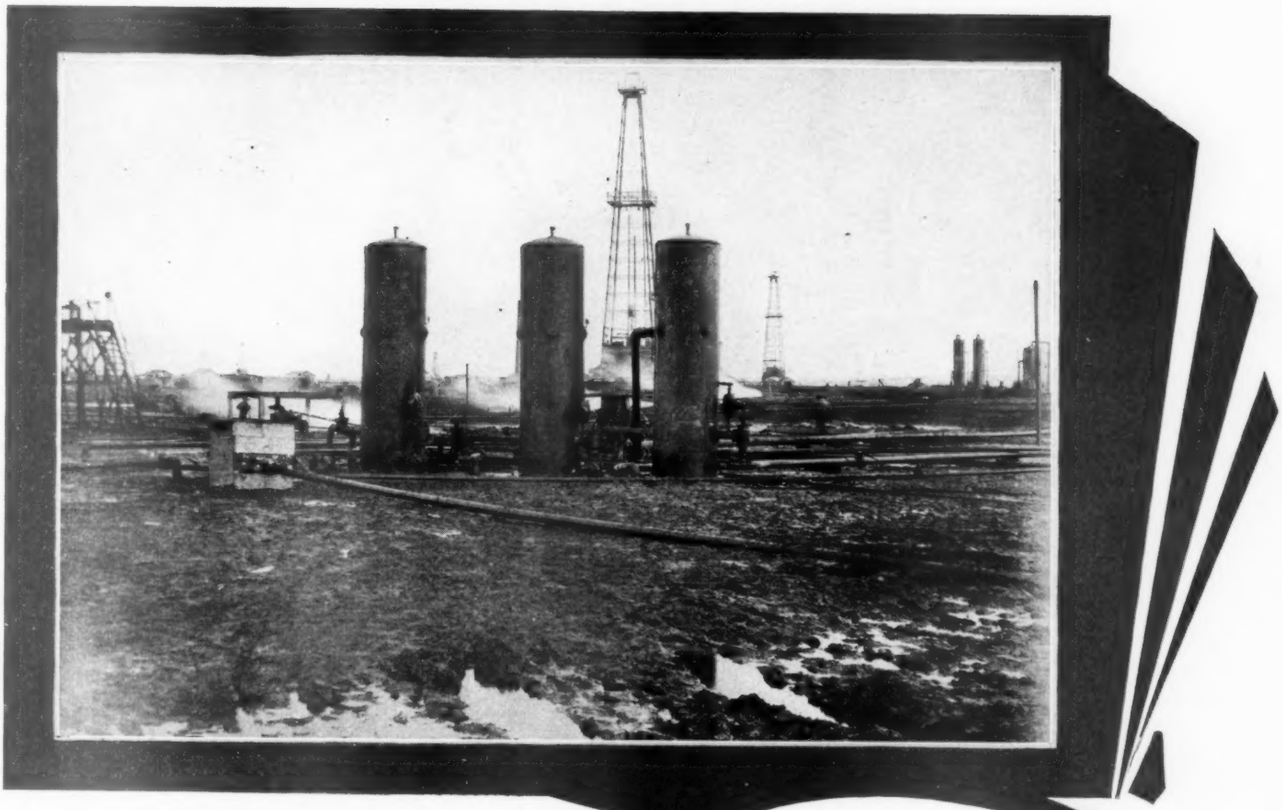
The Wilcox sand in the Garber Field has run true to type. Big wells have small-well neighbors, as is the case in every Wilcox Pool, where often gusher wells are offset by failures that showed nothing but salt water. But the big wells in the Garber Field have been unusually productive in their initial stage. No other field in Oklahoma can show a 26,000-bbl. well and a 16,000-bbl. well, and no Wilcox sand area in the State can show 26 wells with an average of over 6,300 bbls. per well in initial production. The Garber Wilcox area thus far is small, approximating 400 acres, but the Sinclair Oil & Gas Co.'s No. 27 Hartley started at 25,867 bbls.; No. 19 Hartley at 15,760 bbls.; No. 20 Hartley, 9,665 bbls.; No. 21 Hartley, 5,315 bbls. The same company's No. 25 Belveal, the discovery well, in the northeast corner of Section 24-22-4w, started at 2,580 bbls.; No. 27 at 3,000 bbls.; and three others which started at from 100 to 800 bbls. The Sinclair Oil & Gas Co.'s Walker farm, northeast quarter of Section 13-22-4w, yielded seven wells that averaged over 3,000 bbls. per well as follows: No. 20 Walker, 1,740 bbls.; No. 23, 4,700 bbls.; No. 24, 3,100 bbls.; No. 26, 2,400 bbls.; No. 27, 2,100 bbls.; No. 28, 2,000 bbls.; No. 30, 6,000 bbls.

The Mid-Continent Petroleum Corp. and Marland Oil Co.'s Walker farm, Section 13-22-4w, had four big wells from the Wilcox sand, No. 41 having started at 9,000 bbls.; No. 45 at 9,170 bbls.; No. 53 at 7,200 bbls. and No. 54 at 4,560 bbls., while seven others ranged from 300 to 1,000 bbls.

The Roxana Petroleum Corp.'s Schroeder lease proved a wonder in the Wilcox sand with the following initial production record: No. 1-W Schroeder started at 4,171 bbls.; No. 2-W at 7,785 bbls.; No. 3-W, 8,080 bbls.; No. 4-W, 3,000 bbls.; No. 5-W, 9,000 bbls.; No. 6-W, 8,380 bbls.; No. 7-W at 3,300 bbls.; No. 8-W at 3,400 bbls.; No. 9-W at 2,900 bbls. This lease also had two big wells in the Tonkawa sand at 3,000 feet, No. 1-L having started at 4,550 bbls. and No. 6-L at 4,700 bbls.

In the southern part of the State the Carter Oil Co. decided to go below all the known sands in the Hewitt Field in Carter County and drilled a deep test in Section 21-4s-2w, and at 2,980 feet uncovered a sand which yielded a production that was gauged at 14,460 bbls. in one day and 158,275 bbls. in two weeks. Water broke in from behind the casing and in an effort to get a shut-off the well was ruined. It was a freak as there were no big wells around it as later drilling proved.

The Wilcox sand, which has become one of the best known and most discussed producing formations in the Mid-Continent, covered only 7,680 acres two years ago, which area is exceeded by many pools in the United States. It is or has been found productive in Osage, Washington, Tulsa, Pawnee, Creek, Okmulgee, Wagoner, Muskogee, Okfuskee, Hughes, Seminole, Lincoln, Payne, Noble, Garfield and Kay Counties, but in such scattered localities and in such small area that all the pools put together would not make as large a pool as Cushing, in Creek County.



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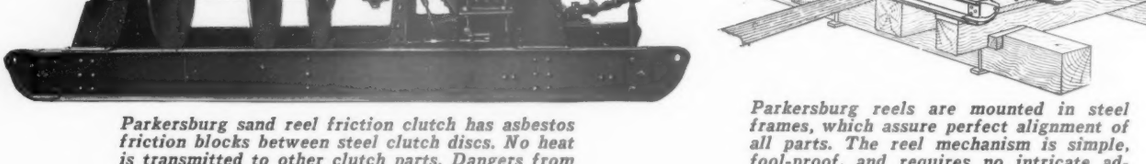
When Hartley No. 27 was "standardized," a Parkersburg Chain-Driven Sand Reel was installed. Using a 7″x28′ bailer, the 3,400′ of heavy rotary mud was bailed in 11 hours!

This is not a bailing record for Parkersburg Chain-Driven Sand Reels—*just every day performance*—heavy, continuous bailing, and without overheating the clutch or braking mechanisms.



Split drive sprocket and positive drive clutch are mounted directly upon the band wheel shaft, and are not attached to the band wheel or band wheel flange.
The reel and its complete driving mechanism can be moved from one rig to another without disturbing the band wheel or band wheel flanges.

Steel frame holds all parts in alignment. No difficulties or delays when dropping light-weight bailers. The positive clutch on band wheel shaft is proof against slippage, due to well spraying water or oil.

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VENEZUELAN CRUDE PRODUCTION IS ABOUT 80,000 BARRELS DAILY

By Special Correspondent

MARACAIBO, Venezuela, Mar. 30.—The latest rumor going the rounds in local oil circles is that Mr. Nathan, who was instrumental in organizing the Lago Petroleum Co., has obtained an option on one-fourth interest in the Colon Development Co., owned by the Carib Syndicate.

Lago's No. 39, in the LaRosa Rield, which has been burning since February 25, was brought under control March 8. The fire was extinguished by the use of steam from eight boilers. They pumped water into No. 37 for several days, trying to flood No. 39, but without success. This method, however, worked on other wells that burned last year in this field.

The average daily production for the week ending March 6 was as follows:

British Controlled Oilfields, Ltd., El Mene Field, 5,000 bbls.; Caribbean Petroleum Co., Mene Grande Field, 24,000 bbls.; Venezuela Gulf, La Rosa Field, 12,500 bbls.; Lago Petroleum Co., La Rosa Field, 15,000 bbls.; Venezuela Oil Concessions Co., La Rosa Field, 18,000 bbls.; Venezuela Oil Concessions Co., La Paz Field, 2,000 bbls.; Venezuela Oil Concessions Co., La Concepcion Field, 3,000 bbls.; total, 79,500 bbls.

This is 4,400 bbls. less than average for the previous week.

Operations in the fields are as follows:

British Controlled Oilfields, Ltd.: El Mene No. 100 came in February 27, at 1,100 feet, for 2,000 bbls; El Mene No. 101, drilling at 600 feet; El Mene No. 102, drilling at 840 feet; El Mene No. 103, drilling at 720 feet; El Mene No. 104, rigging up; La Ceiba No. 1, drilling at 1,560 feet.

Caribbean Petroleum Co., Mene Grande Field: No. 44 came in at 2,200 feet for 1,500 bbls.; No. 59 came in at 2,050 feet for 2,000 bbls.; No. 74, drilling at 1,700 feet; No. 75, drilling at 1,750 feet; No. 76, drilling at 2,138 feet; No. 78, cemented at 1,210 feet; No. 79, cemented; No. 80, drilling at 300 feet; No. 81, drilling at 285 feet.

Colon Development Co.: Tarra Field: No. T-10, drilling at 1,525 feet, and No. T-12, drilling at 620 feet. Oro Field, no change from last week.

Lago Petroleum Corp.: La Rosa Field: No. 37, fishing at 431 feet; No. 48, came in at 2,375 feet; No. 45, drilling at 1,640 feet; No. 46, drilling at 960 feet. Ambrosia Field: No. 5, drilling at 2,010 feet; No. 6, came in at 1,605 feet for 5,000 bbls.; No. 7, location; No. 8, location.

Venezuela Gulf Oil Co.: No. 24 Superior came in at 2,420 feet for 1,500 bbls.; No. 28 Superior, drilling at 1,260 feet; No. 29, Superior, drilling at 110 feet; No. 2 Rodrigue came in at 1,600 feet for 2,000 bbls.; No. 4 Rodrigue, drilling at 1,950 feet; No. 6 Rodrigue, drilling at 940 feet; No. 7 Rodrigue, drilling at 2,800 feet; No. 9 Rodrigue, drilling at 2,400 feet.

Venezuela Oil Concessions Co.: La Rosa Field: No. 46, derrick pulled in; No. 47, came in for 1,000 bbls.; No. 49, came in for 1,500 bbls.; No. 50, swabbing; No. 51, drilling at 1,420 feet; No. 52, drilling at 1,020 feet; No. 53, drilling at 1,510 feet; No. 54, drilling at 1,625 feet; No. 55, drilling at 1,400 feet; No. 56, drilling at 150 feet; No. 57, drilling at 1,020 feet. La Concepcion Field: No. 21, drilling at 1,710 feet; No. 24, drilling at 1,020 feet; No. 25, drilling at 1,325 feet; No. 26, drilling at 1,400 feet; No. 27, drilling at 1,030 feet; No. 28, drilling at 625 feet; No. 29, drilling at 350 feet; No. 22, standing at 1,778 feet; No. 12, cleaning out at 2,500 feet. La Paz Field: No. 15, drilling at 712 feet; No. 16, drilling at 200 feet; No. 11, shut down. Lagunillas Field: No. L-1, sidetracking bit. Sibucara Field: No. S-1, drilling at 110 feet.

Venezuela Gulf Oil Co. (wildcat wells): Geneva No. 1, drilling at 700 feet; Mara No. 1, drilling at 190 feet; Mara No. 4, completed at 1,010 feet; Lagunillas No. 1, fishing; El Menita No. 2, drilling at 1,500 feet; Michigan No. 8, location.

Richmond Petroleum Corp.: El Mamon No. 1, rigging up; Langon No. 1, drilling at 90 feet.

California Exploration Co.: Neogil No. 1, fished out stuck drill pipe and now circulating.

New England Oil Corp.: Rio Pauji No. 4, spudding in.

Standard Oil Co. of Venezuela: Pebiy No. 1, drilling at 2,100 feet; Agua Dulce No. 1, drilling at 420 feet; Agua Viva No. 1, drilling at 3,000 feet; Monaq No. 1, drilling at 4,110 feet; Sucek No. 1, drilling at 320 feet; Sucax No. 1, drilling at 1,465 feet.

No changes reported on wells not mentioned above.

FLORIDA OIL CLAIMS WARNING IS ISSUED

The Miami Better Business Bureau, Inc., has broadcast a warning to the public not to give credence to claims regarding Florida oil possibilities. According to the bureau, literature advising the purchase of oil leases or land about to be drilled is making its appearance. Ballyhoo advertisements concerning the oil possibilities of Florida are being released. The untrained investor, it is pointed out, may fail to notice that such literature is being distributed by organizations which are offering the land for sale.

Herman Gunter, Florida State geologist, also has issued a warning that: "Prospecting for oil and gas, even in a state which is classed as productive, is a very hazardous undertaking; and in a State like Florida it must be considered as wildcatting of the wildest type, which should be undertaken only by those who can afford to lose money so invested."

The oil possibilities of Florida, says the Better Business Bureau, are remote as revealed by tests. In 1924 a well was sunk about 10 miles south of Tallahassee and abandoned at approximately 3,500 feet without a showing of either gas or oil.

The Florida law on the regulation of promotions is unique, says the bureau. Under the law stock sales may be launched in the county where the well is being drilled provided the company maintains its principal office in the county.

OIL BOARD WILL HEAR HUGHES LATE IN MAY

WASHINGTON, Apr. 17.—Former Secretary of State Charles Evans Hughes, counsel for the American Petroleum Institute, has advised Secretary Work of the Interior Department, that he will be glad to appear before the President's Oil Conservation Board the latter part of May on a date to be fixed by the board, in order that he may present certain data which the institute wishes to contribute to the inquiry the Government has been conducting into national petroleum conditions.

Secretary Work, as chairman of the oil board, recently advised Mr. Hughes that he would be absent from Washington in the southwest for about two weeks the latter part of the present month, and that the board would grant public hearing to the institute's counsel either before or after his return to Washington. Mr. Hughes, in a letter just received by Chairman Work, explained that in consequence of court engagements previously made it would be impossible for him to come to Washington until the latter part of May, and expressed a wish to have the board decide on a date for his appearance.

Secretary Work will announce a date for the public hearing after his return to Washington next month.

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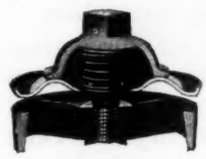

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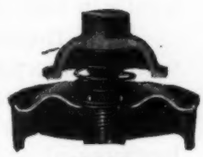

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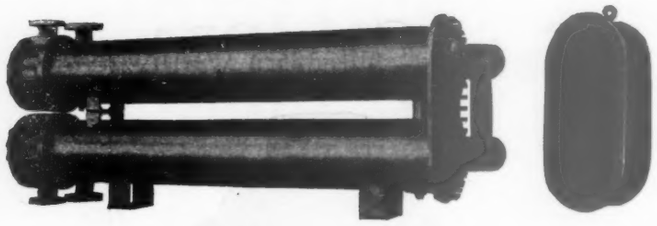

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MUCH TO BE LEARNED IN STUDYING GARBER'S STRUCTURAL CONDITIONS

By C. D. Lockwood

It is a singular fact that the record-breaking initial producer in the Garber Field, the recipient of more publicity than any other well in that spectacular area of big gushers, was drilled in almost a year after the Sinclair Oil & Gas Co. startled the petroleum world with the discovery of deep oil in its No. 25 Belveal. The discovery of the Wilcox and Ordovician lime production was made on April 9, 1925, and it was not until March 25, 1926, that the Sinclair's No. 27 Hartley was drilled into the rich pay which produced 25,867 bbls. of high gravity crude.

Considering the fact that the big well is exactly a mile north of the discovery and that considerable time is required to drill the deep tests in the Garber Pool, this delay may not seem surprising, and yet it illustrates the caution with which operators felt their way northward.

Shortly after the first flock of wells that followed Sinclair's No. 25 Belveal came in, most of the companies operating in the field came to the conclusion that this structure was faulted on the north and northwest, similar to the deep Tonkawa structure and with this in mind they staked locations in that direction carefully. When Sinclair's No. 19 Hartley was brought in November 15 of last year producing 18,194 bbls. in its first full 24 hours, many were convinced that the productive limit in that direction had been reached and that the tremendous output was caused by the well's position up against a major fault. The Sinclair Oil & Gas Co., however, went ahead drilling its No. 20, a location north of No. 19, and finally was rewarded with a producer good for 9,665 bbls. initially. Another location farther north, No. 26 Hartley, never got below the Hoover sand level because of the excellent production it found at that comparatively shallow depth. This well gauged 7,140 bbls. in one day along with about 6,000 bbls. of water from a depth of only 2,723-35 feet and when completed was making 3,347 bbls. at total depth of 2,740 feet.

Franchot Too Far North

In the meantime, D. W. Franchot believed that the productive zone in the Siliceous lime extended far enough north to include part of his property and started his No. 16 Lynds in the southwest corner of Section 7 for the deep horizon. This well was known to be running considerably low before it reached the lower pay although it made as high as 434 bbls. at a depth of 4,425-26 feet and was completed for 235 bbls. at 4,445 feet.

Then the Sinclair Oil & Gas Co. came along with its No. 27 and the whole petroleum industry knows the result. It is interesting to note that the line of demarcation between the big flush production and the area of small output or nothing at all apparently coincides with the property lines along the north side of Sections 18-22-3w and 13-22-4w.

Still an Unsolved Problem

Whether this line of demarcation is a fault or not still remains one of the unsolved problems of the field. Contouring the Siliceous lime in the north end of the pool is a very difficult and hazardous task without the use of fault lines but the present data are insufficient to show just where the fault, if any, lies. In fact, many reputable geologists who have studied the field carefully are convinced that the structure is broken by several faults and cross faults of varying sizes. The Sinclair geological department is also of the opinion that a large fault exists on the northeast flank due to the low position of their Nos. 24 and 25 Hartley, both of which were abandoned as dry. For that reason, No. 28 Hartley is to be drilled only to the Layton sand and will be stopped in the Tonkawa if a good well is obtained at that depth.

The accompanying cross-section of the Garber Field on Page 86 shows the steep dip to the north from No. 27 Hartley to the Franchot well, compared with the gentle slope to the south. This cross-section was prepared by adding No. 20 Hartley, No. 27 Hartley and No. 16 Lynds to a section correlated by H. C. Wheeler and R. L. Clifton and published in The Oil and Gas Journal on November 26 last year.

The full-page map of the Garber Pool, Page 78, shows all of the wells in all sands. This map, of course, covers only a part of the old field, as the shallow Garber wells extend down nearly to the south line of Township 22 north. All of the wells on this map, too, are spotted accurately according to foot measurements, and in the case of drilling wells the letters following the numbers show the horizons which the wells are intended to test. For instance, No. 32-L means that the well has been started for the Layton sand. In some cases, of course, the original intention will be changed during the course of events as happened with the Roxana Petroleum Corp.'s No. 1-L Schroeder which found about 4,500 bbls. of oil initial in the Tonkawa sand.

While emphasizing the Sinclair's No. 27 Hartley, the same company's No. 19 on that lease should not be forgotten for in its first 10 days it tanked almost exactly 160,000 bbls. of oil and in 15⅞ days had produced 239,231 bbls.

The black line on the Garber map, on page 78, dividing Range 3 west from Range 4 west appears in a way almost like a fault line itself, acting as a trap against which the oil was banked up on the east because the biggest wells in the field have been found in a straight north and south line parallel to the range line. These include the Roxana Petroleum Corp.'s great producers on the Schroeder lease, No. 1 with an initial capacity of 6,528 bbls., and No. 2-W with a peak of 10,010 bbls., as well as Nos. 19, 20 and 27 Hartley.

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Imports of crude and refined oils at the principal United States ports for the week ended April 10 totaled 1,709,000 bbls., a daily average of 244,143 bbls., compared with 1,246,000 bbls., a daily average of 178,000 bbls. for the week ended April 3, and a daily average of 246,000 bbls. for the four weeks ended April 10.

At Atlantic Coast Ports—	
Baltimore	241,000
Boston	115,000
New York	503,000
Philadelphia	114,000
Others	249,000
Total	1,322,000
Daily average	188,857
At Gulf Coast Ports—	
Galveston district	163,000
New Orleans and Baton Rouge	224,000
Total	387,000
Daily average	55,286
At All United States Ports—	
Total	1,709,000
Daily average	244,143
Daily average four weeks ended	246,000

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended April 10 totaled 592,000 bbls., a daily average of 84,571 bbls., against 627,000 bbls., a daily average of 89,571 bbls. for the week ended April 3, and a daily average of 94,036 bbls. for the four weeks ended April 10.

At Atlantic Coast Ports—	
Baltimore	260,000
Boston	79,000
Philadelphia	175,000
Others	78,000
Total	592,000
Daily average	84,571
At Gulf Coast Ports—None.	
Total Atlantic and Gulf Coast ports	592,000
Daily average	84,571
Daily average four weeks ended	94,036

M. N. TABER DIES

HOUSTON, Tex., Apr. 19.—Merle N. Taber, aged 37 years, of Toledo, Ohio, research engineer for the National Supply Co., died at a Houston hospital while on a trip to the Coastal region for his company. He graduated from the University of Michigan in 1913 as a chemical engineer.

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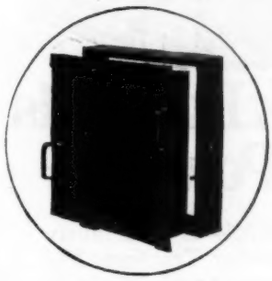

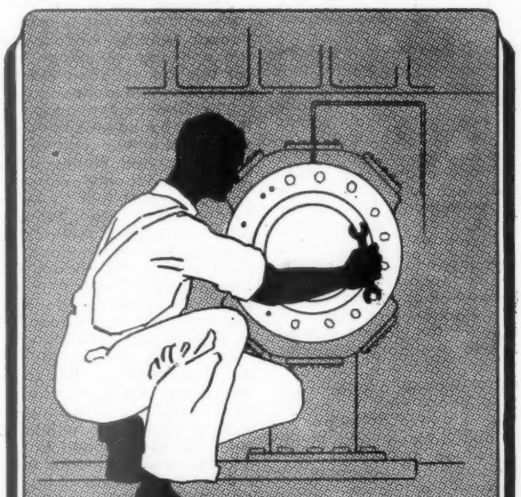

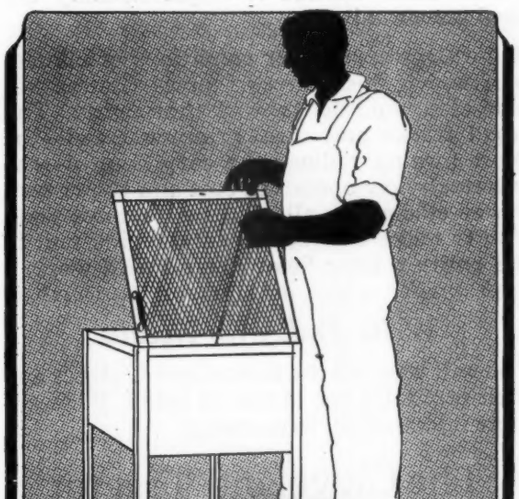

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DEMAND FOR TANKERS INDICATES ACTIVE MARKET FOR OIL PRODUCTS

By N. O. Fanning

NEW YORK, Apr. 17.—There is every reason to believe that the oil business will be unusually active at least up to the end of June, and that this will mean extraordinary prosperity.

The oil tanker charter market is looked upon as an unmistakable index of future activity in the oil business. It is estimated that 50 per cent of the oil used in the world moves in petroleum tankers. A big demand for tankers of course means a big movement of oil, and a heavy movement of petroleum in both coastwise and export trades usually indicates prosperity.

The tanker charter market reached a low point in activity late in 1925, when tankers were practically a drug on the market, and rates fell to the lowest point in more than 10 years. A vessel could be chartered to carry heavy crude from Mexico to New York for as low as 18 cents a barrel. The extent of the recovery in rates since then is revealed by recent charters made at over 40 cents a barrel.

In January and February the charter market took on added momentum, with a heavy demand for tankers of both American and foreign registry, the latter being used almost entirely in the export trade, very few American vessels being engaged in that trade.

The charter rate on foreign vessels for the trade between the Gulf Coast and Europe advanced from around 20 shillings per ton to more than 30 shillings. The rate for American vessels for the trade between California and New York rose from 50 to 80 cents a barrel, and rates for other trades rose proportionately.

In March activity in the charter market diminished suddenly, but rates held fairly well, indicating that there was not an oversupply of tankers. During the last week activity has again sprung up, and the demand for tankers is as large as in the early months of the year.

Recent activity has been for vessels for May and June loading. This is significant as indicating a heavy movement of oil by water during those months.

The present activity is not concentrated on any one trade, but applies to export and coastwise movement of oil, about evenly divided between them.

Three phases of the present demand for tankers are worthy of particular mention:

(1) A heavy demand for foreign tanker tonnage for the Gulf to Europe trade for May and June delivery.

(2) A heavy demand for boats in the trade between Russia and Europe.

(3) A large number of charters in the California-Atlantic Coast trade.

The first phase represents, it is believed, a good export demand for oil in May and June. Of course chartered vessels are in addition to boats owned by oil companies and habitually carrying their own products for export.

The second phase represents, apparently, an active trade between Russia and Europe, and the evident intention of the Russian oil authorities to ship considerable oil to the European markets.

The third phase indicates a continued heavy movement of oil from California to the Atlantic Seaboard.

Incidentally, the rise in charter rates in the various trades is expected to react on oil prices, as cost of delivery is increased.

Other Indications

In addition to the charter market, there are other indications of good business for the first half of the year.

The movement of oil by tanker to the Atlantic Seaboard in March, as shown by The Oil and Gas Journal figures, reached a high record, apparently in anticipation of big consumption in the East. This heavy movement also means withdrawals of oil from other districts where, possibly, it has been piling up in recent months.

Another augury of good times is the heavy export movement of oil from New York, as indicated by weekly compilations made by The Oil and Gas Journal. The bulk exportation of gasoline has been a feature in recent weeks, while kerosene has been shipped in cases on a large scale, and the barrel movement of lubricating oils has increased steadily.

MEXICO RESPONSIBLE CLAIMS COURT HOLDS

By Charles E. Kern

Washington Bureau
The Oil and Gas Journal

WASHINGTON, Apr. 17.—A decision handed down by the Mexican General Claims Commission, holds the present Mexican Government responsible for damages done to American citizens and American property during the "spurious government of Huerta" in 1913 and 1914. The commission held that all routine acts by and in behalf of a government, even under an illegal administration, were binding on the nation.

The ruling was given in connection with the case of George W. Hopkins, of Guyamas, Sonora, Mexico, against the United Mexican States. The Mexican Government held that the non-recognition of Huerta by President Wilson absolved American claims for damages. The commission ruled that "non-recognition by America and its warning against the 'usurper' Huerta, did not affect either Mexico's liability or the right of the United States to espouse claims."

Non-recognition of the Huerta administration "meant that it came into power through force by methods abhorrent to the standards of modern civilization," but this did not affect the vested right of an American citizen.

The Mexican Government also held that the view adopted by the commission gave to American citizens "rights and remedies against Mexico which it withholds from its own citizens." But the commission held that "it is not a question of discrimination, but a question of difference in their respective rights and remedies. The citizens of a nation may enjoy many rights which are withheld from aliens, and conversely, under international law, aliens may enjoy rights and remedies which the nation does not accord to its own citizens."

In deciding the case of the North American Dredging Co. of Texas, the commission held that any contract made between a party of one nationality and a party of another nationality, binding one party not to appeal to its own Government to secure redress for any wrong suffered at the hands of the foreign Government, is void in the beginning.

This decision, according to the commission "points a way to a sound solution of this problem which has for so many years been a source of controversy between nations."

NATIONAL RAILWAYS WARNED ON OUTPUT

According to "El Universal" of Mexico City an important meeting was held April 9 between the managing director of National Railways and representatives of leading oil companies. It is reported the cause was a notice served on National Railways and oil companies regarding over exploitation of a large number of oil wells, suggesting reduction to a reasonable basis in order to avoid premature exhaustion. The meeting is also said to have discussed the question of new contracts for supplying oil to National Railways, under which the railway company would receive fuel oil at certain points on its system under more favorable conditions than it could produce and transport it.

The possibility of a reduction in gasoline price throughout the republic, which former President Obregon is demanding, is said to have been discussed.

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This tip by Mr. Hale to Mr. Everett was as good as a nine month's vacation.

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CALIFORNIA FIELDS

(Continued from Page 56)

O'Donnell, has spudded in No. 3 Childs, an eastern outpost, and is at present going ahead at 650 feet. There is practically no work of any kind being done at Santa Fe Springs from a development standpoint, although operators always have a certain number of wells which require cleanout jobs from time to time.

The Continental Oil Co.'s No. 1 Kraemer in the Richfield district, was put on production early this week at 4,511 feet and it is doing slightly better than 200 bbls. of 24.8 gravity oil daily. A little better production was anticipated but, notwithstanding this disappointment, the well is, nevertheless, a commercial producer. The Birch Oil Co. has just spudded in its No. 1-A at Fullerton and this well, together with No. 12 Orange of the Shell Oil Co., in the same district, has just passed the 400-foot level. The Marland Oil Co.'s No. 1 Bixby at Seal Beach, which is being carried down for a conclusive deep test, is at present rotating ahead at 5,144 feet but the hole has not yet shown an oil sand sufficient to warrant production since passing through the upper zone. No. 4 Bryant of the Shell Oil Co., an offset, was logged early this week at 4,790 feet, the formation being a brown shale streaked with oil sand.

Ventura

There were no completions in the Ventura Avenue Field during the past 7-day period, but since there are several wells showing up unusually good, it is believed that two or three producers will be finished within the next two or three weeks. The next big producer to be finished in this field will probably be No. 26 Lloyd of the Associated Oil Co., which is showing an unusually heavy gas pressure at 5,695 feet. There are seven additional wells on the Lloyd lease and one on the Hartman property, upon which the Associated Oil Co. is concentrating its activities. The company is also making preparations to drill a new well on the Ventura Land & Water property, which adjoins the Lloyd lease to the east, and for this reason the Ventura Avenue Field will be an important one during the rest of the year. The company's new well will be approximately 1,000 feet east of No. 101 Lloyd, which is located in the extreme eastern part of this property, and flowing 1,670 bbls. of 30.3 gravity oil daily at the present time.

In addition to No. 1 Ventura Land & Water, the Associated Oil Co. is starting a new well on the McGonigle lease, held at one time by the Shell Oil Co. It will be located in the southwest corner of the property and is approximately 1,500 feet west and about 400 feet north of No. 101 Lloyd. This gives it a fairly good chance of coming into production, although it may of course, be close to the edge of the structure at this point. No. 3-A Barnard of the General Petroleum Corp. is looking much better as the bit continues its downward journey and the outlook at 4,150 feet is very encouraging. The company intends to secure a maximum penetration, however, and, although the well could be finished right now, it will be carried on down in order to get the benefit of all the sand possible. The company's No. 10 Notten is also showing considerable gas but, since it is only down 3,740 feet, it has another thousand feet or so to go.

Predict Good Producer

Those familiar with the field are predicting a large producer for the Bolsa Chica Oil Co. when No. 1 Hartman is given a test some time within the next 30 days. When this well was spudded in it appeared to be too far north but later developments have shown it to be quite favorably located. The property is at the present time regarded with so much favor that G. J. Magenheimer took over the Louis Hartman ranch north of the Bolsa Chica Oil Co.'s property a few weeks ago and has just spudded in his initial well.

The Associated Oil Co.'s No. 3 Hartman is only about 400 feet south of the Bolsa Chica Oil Co.'s No. 1 Hartman and it is believed that both will come in under a natural flow. No. 1 Willet of the Petroleum Securities in the southern part of the field, is another very promising well and this, too, is expected to result in commercial production. It is only down 3,946 feet at the present time and has at least another 1,000 feet to go before being eligible for a test. The Shell Oil Co. is steadily increasing its drilling program in this field. The company has at the present time four drillers on the Edison property, one on the Taylor and seven on the Gosnell lease.

The Chanslor-Canfield Midway Oil Co. picked up a few small but highly encouraging showings in No. 1 Hobson, drilling midway between the western limits of the Ventura Avenue Field and the ocean front at 3,945 feet. It hardly seems possible that the Ventura Avenue Field extends this far west but there is an unusually good chance of picking up another structure in that vicinity.

The Milham Exploration Co.'s wildcat in Ventura County, about a mile east of No. 101 Lloyd of the Associated Oil Co. in the Ventura Avenue Field is standing cemented at 3,800 feet. This test may bear watching a little later as some very promising indications are reported. The Shell Oil Co. is drilling an interesting wildcat in Ventura County, No. 1 Berlywood, about 10 miles east of the Ventura Avenue Field and not far from Moorpark. It is at the present time rotating ahead in a hard sand streaked with shale at 3,555 feet. Hoyt S. Gale's No. 2 Beardsley, near Camarillo, is going ahead in a hard sand at 2,902 feet.

Midway-Sunset

The Standard Oil Co. completed two new wells in the Midway-Sunset area during the past week, one in Section 29-31-24, and the other in Section 33-31-24. No. 41, in the former section, is producing 170 bbls. daily, from 4,766 feet, while No. 59 in Section 33, is doing 200 bbls. of 23.4 gravity oil. These two properties, formerly held by the Pacific Oil Co., are in proven territory. King C. Gillette completed a comparatively shallow well in Section 21-31-22, by bringing in his No. 2-A, doing 30 bbls. daily from 960 feet. Immediately upon the completion of this hole, Gillette spudded in No. 2-B, which should be finished at approximately the same depth.

The Honolulu Consolidated added two new wells to its list of producers in Section 4-32-24, both of them being completed at 3,600 feet. The company's new wells were No. 22, doing 98 bbls. of 25.6 gravity oil, and No. 41, doing 96 bbls. of the same quality crude. The company immediately spudded in No. 25 and made 100 feet of hole before the close of the week. The Lewis Petroleum Corp.'s No. 8, in Section 6-11-23, staged a short gas blowout at 2,148 feet and, although it has sanded up, it should be cleaned out and ready for a production test within a short time. It was the intention of the Julian Petroleum Corp., when its No. 1 Midway Northern was spudded in, to carry this hole down to the Obispo zone but the rather unsatisfactory results of deep drilling in the Maricopa Flats to date have changed the plans somewhat and it will be finished in the upper zone.

The El Dora Oil Co. did not succeed in picking up the Obispo zone in Section 32-12-23, and its No. 8 is accordingly being plugged back to 3,497 feet for shallow production. The Miocene Oil Co. also failed to pick up this deep sand and its No. 4 in Section 32-12-23, is being suspended at 5,250 feet. Notwithstanding these unsuccessful efforts to develop deep production in the Maricopa Flats, the Obispo Oil Co. is drilling ahead in its No. 11, located on the same property in Section 32-12-23, on which its deep discovery well was drilled, and company officials have hopes of bringing in another fairly large producer. The Lewis Petroleum Corp. put its No. 13 Garner Madison, Section 17-11-23, on the beam at 857 feet and this shallow well is pumping 72 bbls. of 18.1 gravity oil.

Southern California Wildcats

The Union Oil Co. is still looking for the pay in No. 1 McNally at La Mirada and at 4,800 feet the outlook is very discouraging. The Marland Oil Co. has also

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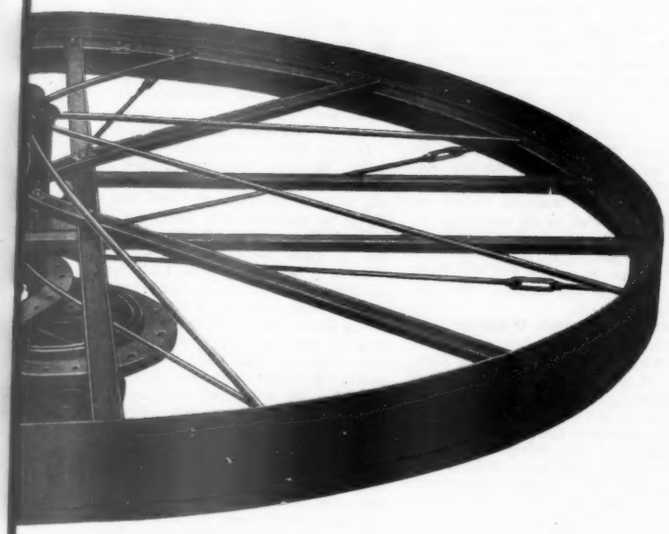

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failed to pick up anything of importance in a wildcat, No. 1 Connelly, at Hyde Park, and it is being transferred to the doubtful list inasmuch as it has passed the 4,700-foot level without noting anything of importance. George W. Johnson has landed a string of 15½-inch in his Manhattan wildcat, No. 1 Martin, at 650 feet and it is believed that drilling will be resumed within the next few days. This is a very important test in view of the oil showings which Bardeen's wildcat has shown and, although water is still holding up a production test in the latter, it looks promising. The Marland Oil Co. apparently failed to secure a satisfactory water shut off in No. 1 Wickman, Section 32-5-17, S. B. B. & M., and it looks as though another cement job will be necessary.

The Twin State Oil Co. has just closed a lease on a large tract of land northwest of the Marland Oil Co.'s well and it is understood that the company contemplates an early test. The Milham Exploration Co. abandoned its first Playa del Rey wildcat as a duster several months ago and it looks as though No. 2 is headed in the same direction, inasmuch as it has failed to show anything of importance from the grass roots down to 4,450 feet. The Standard Oil Co. is hauling in material and rig timbers for No. 1 University, a new wildcat to be drilled in the San Fernando Valley in Section 15-2-15. For some reason or other operators do not regard this location with any particular favor but it is evident that the Standard Oil Co.'s geological staff is of the opinion that the area warrants a test.

Northern California Wildcats

The Union Oil Co. has just about concluded drilling on its No. 1 Miller & Lux, northwest of the Belridge Field in Section 16-28-20, and it is believed that work on the second survey structure hole will be started within the next two weeks. No. 1 Lazard of the Marland Oil Co., 3 miles west of the Lost Hills Field, in Section 27-26-20, was reported several days ago at 2,226 feet. There have been several dusters drilled in this vicinity but the Marland Oil Co. is justified in drilling because of the huge acreage held. It looks as though there will be several more holes put down in this area during the next several months. No. 1 Sisson, the Milham Oil Co.'s Buttonwillow wildcat, is rotating ahead in a hard sandy shale at 2,050 feet, but is not yet deep enough to be of interest. The Shell Oil Co. picked up its first showing in No. 1 Vedder in the Mount Poso Creek area at 1,800 feet, but it was not sufficient to warrant a test.

Heavy oil is encountered all through this area but in the past operators have experienced considerable difficulty in shutting off water. The Shell Oil Co. has been working all up and down the San Joaquin Valley for the past two years and it is reported that recent experiments with a torsion balance and seismograph have been quite successful, although no actual discovery has yet been attributed to these sources. The company spent five or six months geologizing the Mount Poso Creek area and has hopes of eventually opening up production. The Associated Oil Co. is still testing its Kerman wildcat at 5,735 feet but so far all efforts to develop production have been futile. The company's wildcat near Huron is going a head at 1,770 feet. The Pyramid Oil Co. is making rather slow progress with its wildcat in Monterey County due to a rather troublesome boulder condition, which has necessitated the landing of an extra string of casing.

MEXICAN FIELDS

(Continued from Page 50)

is in shale at 650 feet; its No. 9 Lot 14 Tanchocuin, has cemented 6-inch in gray limestone at 1,192 feet; No. 12, same lot, is in lime at 2,260 feet, and No. 4 Peralta is drilling in lime with a showing of oil at 1,980 feet. Mordelo Vincent's No. 1 Tampuche, is in gray lime at 1,700 feet; and his No. 1 Tamante, is in pink shale at 610 feet. Vera Cruz Mexican Oil Co.'s No. 9 Buena Vista, is in gray lime at 2,080 feet. Cia. Esplotadora de Riquezas Naturales, No. 1 Buena Vista, is drilled to 1,200 feet, gray lime.

South Fields

In the south fields, drilling operations are a bit slack. The following epitomizes them as the past week ended: Huasteca Petroleum Co.'s No. 65 Cerro Azul, is in pink shale and shells at 2,640 feet; No. 71, is in gray shale and shells at 2,090 feet, and No. 75, is in brown lime at 1,850 feet. Down in Tierra Blanca, Huasteca's No. 63, is in gray lime at 2,378 feet; No. 64, is in gray and brown lime at 1,954 feet, and No. 67, is in gray lime at 2,118 feet. Up in Casiano, (Chinampa), Huasteca's No. 16, is in brown lime at 2,144 feet. Cia Petroleum Financiera's No. 29 Chiconillo, is in gray shale at 1,917 feet. Mexican Eagle Oil Co.'s No. 26 Alazan, is in brown lime at 2,746 feet; No. 18 San Geronimo, is in gray shale at 460 feet; No. 36 Los Naranjos, is in sticky shale at 1,593 feet; No. 11 Amatlan, is in shale at 490 feet. And, well south of the Tuxpam River, in the neighborhood of Furbero, its No. 1 Lot 2 Escobal, is in a sandstone at 3,014 feet. Penn-Mex Fuel Co.'s No. 3 La Pita, is in the Chiontepec limes at 3,826 feet.

Northern Miscellany

In the Ebano sector of the northern fields, Mexican Petroleum Co.'s operations follow: In the Chijol sector, No. 45, is in white lime at 2,185 feet; No. 52, is in shale at 115 feet; No. 53, is in gray lime with a showing of oil and gas at 1,440 feet; No. 54, is rigging; No. 55, is in gray lime at 1,530 feet. In its Silva, No. 3, is in hard gray lime at 1,870 feet, and No. 6, there is rigging. In La Dicha, No. 60, has cemented 8-inch in gray lime at 1,285 feet; No. 75, is in lime shells at 1,025 feet; No. 76, is shut down for orders in white lime at 2,340 feet; No. 80, is in gray shale at 40 feet; No. 87, is in the same formation at 860 feet. In the Midway, No. 9, is in gray lime at 1,610 feet, showing oil; No. 11, is in white lime, also showing, at 1,893 feet; No. 13, is in blue shale at 1,200 feet, and No. 23, is spudding in in yellow clay at 23 feet. In San Pedro, No. 17 is straightening hole in white lime at 2,010 feet; No. 20, is in gray lime at 1,650 feet, and No. 12-A La Pez, is rigged.

Continuing in this Ebano sector of the northern fields, National Lines' operations in its right of way there are best summed as follows: No. 34 Chapacao, is in gray and brown lime at 2,215 feet; No. 39, is in the Tamasopa at 2,230 feet; No. 40, is rigged, and No. 43, is in gray shale at 1,225 feet.

Ita Mex Oil Co.'s No. 22 La Mula, in the Topila district, is in shale at 1,814 feet. Cia. Petroleum Financiera, No. 2, Lot 14, Pac. de Agua, same district, is drilling around 1,800 feet in gray lime.

In the Marland Field, Cia. Petroleum Franco Espanola, No. 45 Limon, is running 8-inch in shells at 1,556 feet; No. 49, is in lime shells and shale at 1,661 feet; No. 50, is in lime at 2,200 feet; No. 51, has cemented 8-inch in lime at 1,449 feet, and two tests are preparing to rig.

India Oil Co.'s No. 1 Rayon, is drilling in gray shale at 980 feet.

International Petroleum Co.'s No. 1 Tanceme, south of Panuco and Topila, is an exceptionally deep test, in gray lime and chert, at 5,150 feet.

Mexican Gulf Oil Co.'s operations in the Corcovado sector, are as follows: No. 37 Chapacao, is in gray lime at 1,420 feet; No. 38, has cemented 8-inch in gray lime at 1,098 feet, and No. 39, is clearing location.

In the Caracol, Mexican Gulf Oil Co.'s No. 6, is in brown lime at 2,405 feet. Venable and others' No. 32 Caracol, is in the San Felipe at around 2,200 feet.

Wells in March

There were some 61 wells completed in Mexican fields during the month of March, of which 57 can be credited to the north fields, and four to the south fields. Of this number, the north fields had 17 producers, with new potential production of say, 41,375 bbls.; the south fields, three, with new potential production of say, 20,050 bbls.—a total of 61,425 bbls. for the month.

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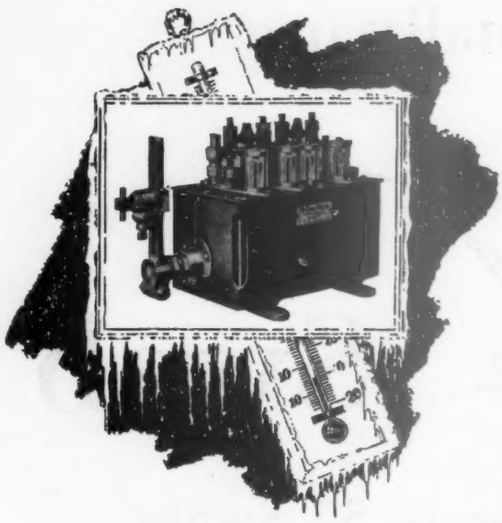

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CONFUSION IN CORPORATE TAXES COSTLY BURDEN ON OIL INDUSTRY

By Reinhold Hekeler*
Assistant Secretary, The Texas Company

At the present time, if a business enterprise is carried on in more than one state, the persons conducting it find themselves taxed in as many different ways as there are states in which the business is conducted. And there seems to be no end to the confusion. The trend seems to be toward a greater variety of methods for taxing corporations, and legislatures apparently do not realize the burden they are imposing in making corporations prepare such a multitude of tax returns. Prof. H. L. Lutz, in his interesting book on Public Finance says that it has been impossible to curb the tendency toward diversity in taxing methods and the result has been a bewildering variety of taxes levied on property, capital stock, gross and net earnings, and other indicia of corporate capacity.

A corporation doing business in all the states of the Union has to contend with such a variety of tax laws that it requires the employment of a large staff of experts to look after its tax matters. So many changes in tax laws are made when the state legislatures meet, that the tax experts must continually keep on the lookout for fear of overlooking some new tax requirement of a state or endangering the corporation's right to do business in that state.

I am not stressing the fact that taxes are continually mounting and mounting, and that the favorite "indoor sport" of legislature is to add more and more taxes on corporations. The same amount of taxes could be collected if a uniform system were devised. The rate of tax could and would undoubtedly vary according to the budget requirements of the state, but the many varieties of taxes place an unjustifiable burden on business men, which can and should be eliminated. As stated, I am not complaining of the amounts corporations pay in taxes, but at the same time it will be of interest to know that the corporation I represent paid for 1924 in taxes approximately 70 cents for each $1 paid in dividends. Our company paid for 1924 taxes $2.15 for each share of stock issued and outstanding, and when we consider that this company has over 30,000 stockholders, residing in every state of the Union, it becomes clear that in taxing corporations the legislatures are taxing their own citizens.

Triplicate Taxation

Corporations are frequently more heavily taxed than individuals are. A man who has a business in Illinois, for example, will be taxed on his real and personal property; but if he forms a corporation to conduct this business, such corporation will be taxed on the real and personal property as the individual is, and in addition it must pay a heavy franchise tax. This makes the corporation a victim of double taxation. On this question Frederick N. Judson said in his address before the Twelfth Annual Tax Conference at Chicago on the subject "Some Constitutional Aspects of Taxation:"

"In some states, notably Massachusetts, New York, and Wisconsin, elaborate state income tax systems have been adopted. The evil of double taxation has been sought to be, to some extent, avoided by making the income tax substitutionary, that is, by exempting from the general property tax the personal property consisting of intangible securities. It is obvious, however, that wherever the tax is levied both upon the income and the property from which the income is derived, we have double taxation. Other states are adopting the income tax, not as substitutionary, but as supplemental to a system of property taxation, without any exemption of any class of property from which the income is derived. In such cases we not only have the double taxation incident to such an income tax, but also triplicate taxation, when the same tax is levied by Federal and State Governments."

Few persons realize what it costs a corporation to prepare tax reports and to attend to the payment of taxes, aside from the amount of money paid for the taxes themselves. An expenditure of many hundreds of thousands of dollars is incurred each year by my company in maintaining a separate tax department under a director and divisional heads both in New York and in the south and the west, assistants in New York and Houston, a large force of accountants and statisticians, engineers, etc. The company derives absolutely no income or profit from this expenditure, which could be greatly reduced if there were uniformity in state taxes and the consequent tax returns.

Costly Reports

Every state has a different kind of form on which tax returns or reports of business done must be reported to the state authorities. Some states require only a list of officers and directors; others require in addition a report of the location and value of all tangible property owned by the corporation in the state; others call for figures showing gross receipts from sales or manufacture within the state; others ask for figures contained in the federal income tax return and a copy of the annual statement or balance sheet of the corporation, and so on. The dates as of which these reports are made vary, so that the company must take inventories at various times during the year.

Then, in addition to all the foregoing, some states require the filing of lists of stockholders, and the dates as of which these lists are compiled vary, so that one list for all states will not suffice; it is necessary to prepare many lists, all at the expense of the corporation.

In 1924 the corporation I represent filed 187 state reports covering its operations, to say nothing of about 25 other state reports it had to file on behalf of its subsidiaries. This means approximately four reports each week, but the work of preparing these reports cannot be spread over the year so that four could be prepared each week. Many of the reports are due about the same time, so that during some month the corporation's tax department is unreasonably overburdened.

We filed franchise tax returns in all but two or three states. These were called either franchise, license, excise, or capital stock returns, or certificates, or annual reports. In most of these states a franchise tax was collected based on these reports. Many states require a franchise report and in addition a license report, or they collect both a franchise and a license tax. These states are Alabama, California, Delaware, Missouri, Montana, Nebraska, New Mexico, Rhode Island, South Carolina, Tennessee, and West Virginia. In the following states we filed corporate income tax returns; Connecticut, Missouri, Montana, North Carolina, North Dakota, South Carolina, Virginia, and Wisconsin. In addition we filed miscellaneous reports in Arizona, Arkansas, Massachusetts, Missouri, Nebraska, New Hampshire, Ohio, South Carolina and Vermont. We also filed lists of stockholders in many states, and information as to transfers of stock.

Varieties of Taxes

In addition to all these returns we filed lists in various states showing resident employes who received salaries in excess of certain amounts, and in some states, New York for example, we had to withhold personal income taxes from non-resident employes and remit to the state, thus making us the state's collecting agency, without any compensation for our efforts and expense incurred in so doing.

Then there are states that impose a merchant's license tax in addition to all

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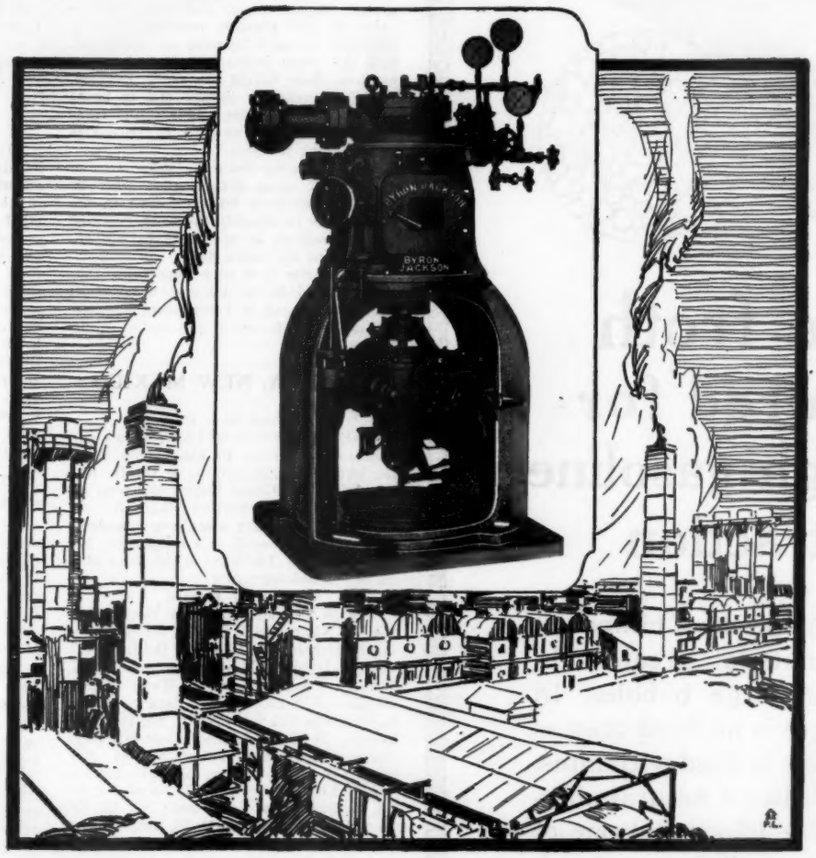

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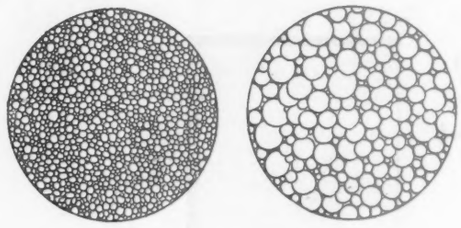

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other franchise or capital stock or income taxes. In Delaware there is a merchant's license tax based on gross receipts. In Missouri there are two merchant's license taxes, one based on the value of the greatest amount of merchandise on hand between certain dates, and the other based on the volume of business done during the year. Pennsylvania's merchant's license tax is based on volume of business, and Virginia taxes merchants on the amount of purchases made during the year.

The foregoing remarks show conclusively that some action must soon be taken. Something must be done in the near future to simplify the work expected of corporations in apprising taxing authorities of the taxes due.

This matter is of such importance that there should be no delay, and no effort should be spared to bring about the necessary action by all of the states in the Union.

ARTESIA, NEW MEXICO

(Continued from Page 41)

the SE SE, Section 12-18-27, shows this well to be making 40 bbls. This is being offset by Haussenfuse & Donly, who purchased the Grant Keyes 40 acres, being the NE NE, Section 13-18-27.

A small well has also been completed by Kersey & Conrad, this being their No. 2, in Section 18-18-28, which was shot in the 2,100-foot sand.

Drilling Report

Decum Development Co.'s No. 1 Vandagriff, NE cor. SE, Section 5-17-28, shut down temporarily; Colorado Drilling Co.'s No. 1 Irvin, SE SE, Section 8-16-27, fishing; Compton's No. 2 Mann permit, Section 3-18-27, moving larger rig to hole; Dome Oil Co.'s No. 6, SE cor. NE, Section 21-18-28, drilling below 600 feet; Flynn, Welch and Yates' No. 41, SW cor. NW SW, Section 3-18-27, drilling below 1,050 feet; No. 42, Section 3-18-28, drilling below 1,000 feet; No. 43, SE cor. NE, Section 28-18-28, drilling below 2,100 feet; No. 44, NE NW, Section 9-18-28, drilling below 1,600 feet; No. 45, NE SE, Section 21-18-28, rigging up; Fletcher Oil Co.'s No. 1, SW, Section 5-19-28, drilling below 2,435 feet; Frontier Peroleum Co.'s No. 2 McQuigg Brothers, Section 4-18-28, cleaning out after shot; No. 4 McQuigg Brothers, Section 4-18-28, drilling below 2,225 feet; No. 11 McQuigg Brothers, Section 4-18-28, drilling below 1,465 feet; Levers-Carper's No. 2, NE SW, Section 3-18-28, on production; Levers-Wilson's No. 5, SW SE, Section 18-18-28, cleaning out after shot; Mesa Oil Co.'s No. 1, Section 4-19-28, cleaning out after shot; McFrederick-Eppenauer's No. 1, Section 15-19-25, abandoned at 3,200 feet; Ohio Oil Co.'s No. 1 Edgerton, NW NW, Section 18-18-29, drilling below 2,950 feet; No. 1 New State, NW NE, Section 8-18-29, cleaning out after shot; No. 9 New State, SE SW SE, Section 4-18-28, drilling below 3,700 feet; No. 10 New State, Section 4-18-28, cleaning out after shot; No. 1 Marion, SE NE, Section 5-18-28, cleaning out after shot; No. 1 Toomie-Allen, Section 22-18-29, plugging back; Picher Oil & Gas Corp.'s No. 2, SE SE, Section 12-18-27, on production; A. H. Ramage's No. 1, SW SE, Section 2-18-28, cleaning out after shot; Snowden & McSweeney's No. 4, NE cor. NE NW, Section 33-18-28, on production; Swartz, Compton and Eaton, Brainard permit, NE cor. SW, Section 5-18-27, reaming; Texas Production Co.'s No. 5, Section 8-18-28, drilling below 250 feet; Wade & Bujac's No. 1 Goodale, NW NW, Section 19-18-28, drilling below 1,500 feet.

Chaves County

Arkansas Gas & Fuel Co.'s No. 1 Manning Dome, SE cor. Section 14-15-27, fishing for dropped pipe; Colorado Gas & Fuel Co., NW SW, Section 16-8-27, drilling at 4,840 feet; Neal and others' No. 1, Section 25-9-25, drilling below 1,110 feet; Robert and others, NE, Section 15-11-26, drilling below 665 feet.

Lea County

Maljamar Oil & Gas Corp.'s No. 1 Baish permit, NE, Section 21-17-32, drilling below 3,260 feet; No. 1 Mitchell permit, SW cor. Section 5-17-32, moving rig to location which has been validated; No. 1, Beardsley permit, NE cor. Section 15-17-32, location; No. 1 Pearsall permit, NE cor. Section 33-17-32, moving rig to hole which has been validated; Ross' No. 1, Section 27-10-32, drilling.

ALBERTA LEGISLATION ON OIL OPERATIONS

By Victor Lauriston

CHATHAM, Ont., Apr. 17.—The new legislation of the Alberta Provincial Government governing oil and gas operations in the province empowers the Government to establish regulations by order in council with respect to drilling operations and oil and gas development generally; with the proviso that all such regulations are to be submitted to the next session of the legislature. At present natural resources on crown lands in Alberta are under control of the Federal Government; but the Federal regulations apply only to about 40 per cent of the area, Hudson's Bay Co. lands, lands controlled by the C. P. R. and homesteads prior to 1887 being exempt. The provincial regulations will apply to these areas; and will also govern the Federal areas should the natural resources be transferred to the province.

It is planned to secure expert advice in drafting the regulations; and the provincial Government has retained Stanley J. Davies, formerly Federal petroleum engineer, as advisory consulting engineer. It is aimed to make the regulations as reasonable as possible, so as not to hamper development work.

Amendments to the Alberta Pipe Line Act, before the legislature provide that the board of public utility commissioners may require any oil or gas pipe line company to purchase all production in territory reached by its lines; or to purchase from each producer rateably in proportion to the average daily production; also to prohibit the purchaser from discriminating in price or amount for like grades of oil. The board may also, if the purchaser is likewise a producer, prohibit the producer from discriminating in favor of its own production or storage. Provision is also made whereby a pipe line company must secure a permit before crossing any road allowance.

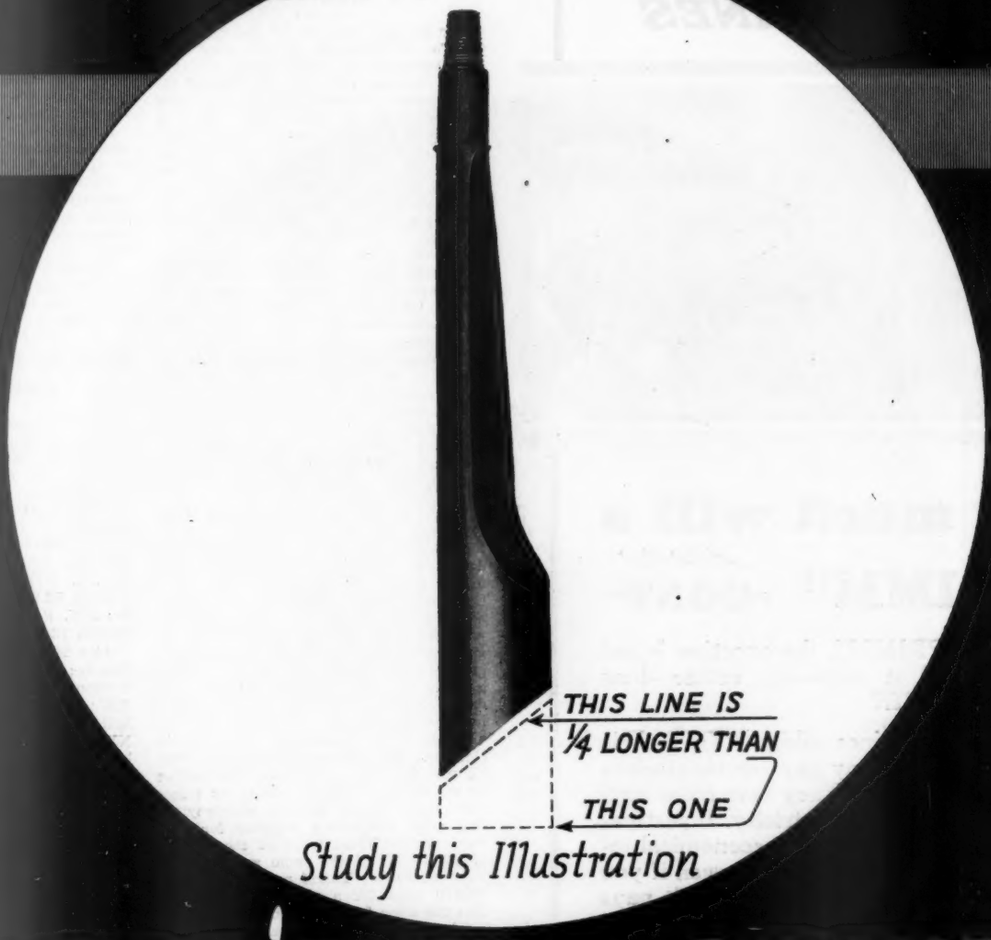
UNIVERSITY ROYALTIES PUT IN U. S. BONDS

AUSTIN, Tex., Apr. 17.—With April payment of royalties on oil production from land owned by the University of Texas in the Reagan County Field, fund from this source will have amounted to more than $3,000,000. The State constitution provides all permanent funds of the university shall be invested in either State or United States bonds.

As there are no State bonds available, it will be necessary to buy United States bonds. Such purchase devolves on the State Board of Education. Besides this proposed original investment of more than $3,000,000, similar purchases to the amount of $250,000 to $3,000 a month will be made from additional royalties. Not only has there been a large increase in oil production of the Reagan County Field during the past three weeks, but rapid development of the new pool in Crane County, 65 miles from the Reagan County Field, is in prospect.

OIL ROYALTY RIGHT PROPERTY

WASHINGTON, D. C., Apr. 17.—A retained royalty right in an oil lease is property, the Board of Tax Appeals held in the case of Anna Taylor of Haynesville, La. She contended that the amount of $32,000 received from the sale of a fractional part of her royalty interest in oil production from land she owns and had leased in Claiborne Parish, Louisiana, is a return of capital and not income. The board held that since the taxpayer sold property in excess of cost and this property had no value on March 1, 1913, the entire consideration received for such property is taxable gain.



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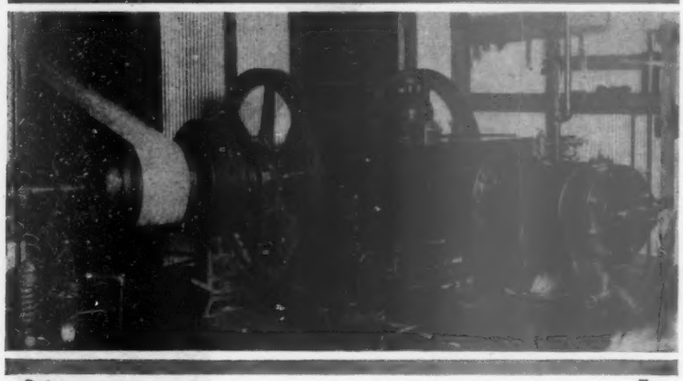

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California Standard Did Largest Business On Record in 1925

The annual statement of the Standard Oil Co. of California for the year ending December 31, 1925, shows the net profits for the year was $30,953,485.15, an increase of $4,351,971.41, or 16.36 per cent over the year 1924. This is a profit of 9.29 per cent on the combined issued capital and book surplus of December 31, 1925, and is equivalent of $3.25 per share on the outstanding capital stock of that date, as compared to $2.83 per share for 1924. The report continues:

General business conditions on the Pacific Coast during 1925 were good. The company did the largest business in its history, but price conditions reflected the continued overproduction of crude oil. The company added to its inventories of oil during the year 11,781,263 bbls. at a cost of $14,305,568. Notwithstanding these conditions the financial condition of the company at the end of the year was very satisfactory. The company retired during the year $2,500,000 of its gold notes and had on hand on December 31, over $44,000,000 in cash and securities.

There was a continued demand from European and eastern markets for California petroleum products. Reflecting a declining production in California and higher prices for crude oil in the Mid-Continent, prices of California crude oil advanced in February, 1925, together with prices of refinery products such as gasoline and fuel oil. Due to large flush production in Inglewood Field (reaching a peak in August of 104,000 bbls. per day), together with increasing stocks of heavy crude and fuel oil, prices of crude oil declined in September and again in October. The decline in prices of crude oil was reflected principally in a decline on the price of fuel oil. The new prices for crude offered by the company in September provided a schedule for each field, account being taken of the varying values of oil of the same gravity from different fields. Therefore the company's offered price for a given gravity of oil was the same for all fields.

The consolidated balance sheet December 31, 1925, follows:

Assets

Plant account	$219,623,318.09
*Investment in securities	29,816,134.07
Inventories	84,392,319.93
Accounts receivable	21,024,703.06
Notes receivable	684,591.84
Deferred charges	3,354,360.79
Cash	14,827,199.31
Total assets	$373,722,627.00

Liabilities

Capital stock authorized	$250,000,000.00
Less: Unissued stock	12,089,150.00
Capital stock outstanding	$237,910,850.00
5% serial gold notes	20,000,000.00
Accounts payable	8,518,816.19
Merchandise due on contract	140,238.64
Accrued gold note interest	416,666.66
Insurance reserve	1,891,394.51
Income tax reserve	3,015,986.59
Suspended earnings	1,722,355.00
Surplus	95,106,325.41
Total liabilities	$373,722,627.00

*At cost (substantially less than the market value.)

Crude Oil Production

The production of crude oil during 1925 from the company's wells was 35,652,982 bbls., an average of 97,679 bbls. daily, compared with a production in 1924, of 28,677,249 bbls., or 78,353 bbls. daily. The company's production as of December 31, 1925, was 98,544 bbls. daily.

On January 1, 1925, the company had 1,100 bbls. per day of production shut in. On December 31, the company's shut in production amounted to 24,138 bbls. per day. It is estimated that the total shut in production in the State was 25,960 bbls. per day on January 1, and 63,540 bbls. per day on December 31.

The company completed during the year 150 producing wells and 24 wells were abandoned as dry holes. On December 31, 51 strings of tools were in operation, 29 of which were employed in drilling new wells.

The foreign producing activities of the company were confined largely to Venezuela where large prospective holdings have been acquired upon which active drilling is now in progress.

Total crude oil runs for 1925 amounted to an average of 194,991 bbls. daily, a decrease of 8,092 bbls. daily from 1924. Of this amount, 32,200,513 bbls., or 88,221 bbls. daily, were purchased from 301 different producers' leases. Oil and gas lines were laid connecting Inglewood to the El Segundo refinery and Wheeler Ridge was connected by pipe line to the Midway Field system.

Average daily runs of crude oil to the stills at the refineries were 173,798 bbls., as against 144,075 bbls. in 1924.

Three fuel oil reservoirs, each with a capacity of 3,100,000 bbls., were completed during the year. These are the largest oil reservoirs of this type in the world.

A total of 720 storage distributing stations and 731 automobile service stations were being operated on December 31, 1925.

BIDS TO BE RECEIVED FOR SCHOOL LEASES

The Commissioners of the Land Office of the State of Oklahoma, will receive sealed bids until 2 o'clock p. m., on April 27, for oil and gas leases on the following School and State Lands in Comanche County: SW, Section 36-2n-10w; in Lincoln County, NE Section 36-17n-3e; NW, Section 36-17n-3e; SE, Section 36-17n-3e; in Pawnee County, NE, Section 16-21-n-6e; NW, Section 16-21n-6e; SE, Section 16-21n-6e; SW, Section 16-21n-6e; E half NE, Section 13-20n-7e.

Also Block 3 in Cimarron County as follows: NE NE; NE SE; S half SW, Section 15; NE; NE NW and S half NW; S half, Section 16; N half NE; W half NW; SE; W half SW, Section 21; NW NE; N half NW; SE SE and W half SE; SW, Section 22; NW; E half SW, Section 25; E half NE; W half NW; SW, Section 26; all of Section 27; SW NE; SE NW; SE; E half SW, Section 28; all of Section 33; E half; NW NW; NW SW and S half SW, Section 34; all of Section 35; W half, Section 36.

All the above named tracts are located in Township 6n, Range 2e, CM.

Lots 1 and 2, and S half NE; Lots 3 and 4, and S half NW, Section 2; Lots 1 and 2, NE; Lot 4, and SW NW; E half SE; SW, Section 3; Lots 1 and 2, and S half NE; Lots 3 and 4, and S half NW; SE; W half SW, Section 4; NE NW and S half NW, Section 10; S half NW; SE SE, Section 11; NE SW and S half SW, Section 12; W half NW, Section 13; all of Section 14; SE NE; SE NW; E half SE, Section 15; E half Section 16; SE, Section 21; NE NE and W half NE; NE NW and S half NW; S half, Section 22; all of Section 23; NW, Section 26; N half, Section 27; NE, Section 28.

The above named tracts are located in Township 5n, Range 2e, CM.

Bids will be received until 2 o'clock p. m., on May 4, 1926, for oil and gas leases on School and State Lands in Pawnee County; NE, Section 16-20n-9e; SE, Section 16-20n-9e.

WILLIAM S. DEWEY DEAD

William S. Dewey of Tulsa, age 59 years, assistant superintendent of production for the Sinclair Oil & Gas Co., in the Oklahoma Field, died in a hospital in Houston, Tex., Tuesday, April 6. He had been in ill health for some time.

Mr. Dewey had a long and varied experience in the oil business. He was with the Pure Oil Co. in the Eastern fields and had represented the Sinclair interests in Europe and in Africa on special missions.

He was a member of several Masonic bodies which he joined in Sistersville and Wheeling, W. Va., and belonged to the Tulsa lodge of Elks.

His wife and one son, C. H. Dewey, and other relatives were with him when the end came. The funeral services were held in Houston, and the body taken to Tulsa for burial.

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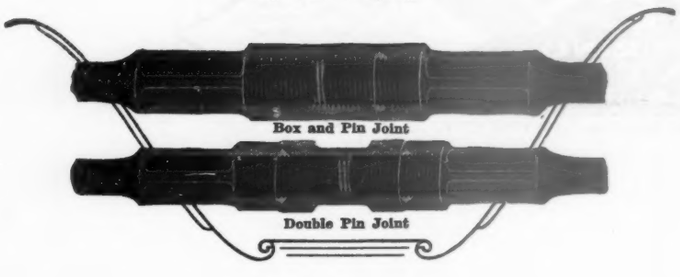


STANDARDIZATION OF BURNERS ON QUALITY OF OIL USED URGED

By H. W. Camp*
General Superintendent, Empire Refineries, Inc.

From reading statistical data on the growth of the oil burner industry, I understand that the burner installations for 1926 have been estimated at 246,000, 90 per cent of which will be domestic burners. The oil industry must recognize the importance of this business as one of its outlets for its finished products and it has been recognized, as evidenced by the ready supply of oil that has been available through the rapid development in the use of these burners.

Our problem now, though, is to shape our plans for the future so that the design of the burner is in keeping with the kind of oil the refiner will be able to supply economically. The refiner will supply most any kind of oil provided he is given a price commensurate with the value of that oil were it further processed and sold as another product. But, we cannot expect to sell any at a price that will make it prohibitive in cost compared to coal or gas as that has limited the development of electric heaters.

Possibly you would be interested in knowing the general scheme of refining as a basis for a better understanding of why specifications are set and why we may expect certain changes in the kind of oil that will be available as fuel oil in the future. You know that petroleum is the source of gasoline, kerosene, furnace oil, gas oil, lubricating oils, wax, fuel oil and various special oils and these are made principally through the process of distillation by segregating the respective fractions as they distill off. This is done by running the crude to the first of a connected series of 6 to 10 stills and holding each successive still at a higher certain temperature so that the more volatile fractions distill off at the first stills to make gasoline and then kerosene and so on down through the entire battery of stills, taking off in turn gasoline, kerosene, gas oil, lub and wax distillate and the resultant residuum in the last still is either cylinder stock or fuel oil. If the residuum is of good color, has a low tar content and has good lubricating qualities, it may be sold as steam refined stock or may be treated and filtered and dewaxed to make bright stock, a base for most motor oils.

Pressure Fuel Oil

After this primary distillation, each of these oils goes through additional processing such as treating, filtering, dewaxing, etc., but you are most interested in a detail of the processes that affect the production of fuel oils. The principal factor that is affecting the production and quality of various fuel oils in cracking whereby gas oil or even fuel oil are subjected to high temperatures and pressure and through a physical change the heavy fuel oil and gas oil are broken down to yield gasoline, kerosene, etc. Part of the oil, however, remains uncracked and is termed pressure fuel oil and this oil is exceptionally adaptable to household heating where burners have been designed to handle the heavier fuels. This oil has a low cold test and usually runs below 10 degrees Fahrenheit so that it can be used in cold climates. It has a low viscosity in as much as it contains considerable uncracked light hydrocarbons and for this reason it may be easily pumped or will readily gravitate where this burner supply is dependent upon gravitation.

Certain cracking processes are being developed, however, to make a comparatively heavy pressure fuel oil by continually recycling the uncracked residuum within the unit and the result is that only gasoline, a light distillate and cake will be made. This change will no doubt be seen for some time in the future as cracking is further developed since the refiner's problem is to make the most gasoline per barrel of crude run and every bit of available pressure charging stock will be used. This change, of course, cannot come about in a period of a few years and there will always be certain refiners who, because of local conditions, will cater to requests for special oils so I do not want to give you the impression that there will be no fuel oil available but I just want to point out that the refiner has a use for fuel in making alternate products and the price of fuel oil will be greatly influenced by its value as a cracking stock which in turn will be dependent upon this price of gasoline in a rather indirect way as time goes on.

Relatively Light Fuel

From the description of the many household burners on the market, I believe that the great majority of them have been designed to burn a relatively light fuel oil or what might be better termed a heavy distillate which would approximate a heavy kerosene. The convenience in the use of this lighter oil no doubt overbalances the lesser heating value compared to the heavier fuel oil and it appears now that the refiner will be able to supply economically such a distillate as a product from the cracking stills. As cracking is carried out, not only is gasoline made but a complete series of hydrocarbons so that by fractionation, a cut of furnace oil can be made and this oil will have specifications approximating 36 to 39 gravity; flash 140-170; cold test below zero. The reason for making a cracked distillate is to cheapen its cost to the consumer which should be the aim of the refiner, and the burner manufacturer, for profits now are dependent upon volume and only by supplying things at a minimum cost can we hope to get that volume.

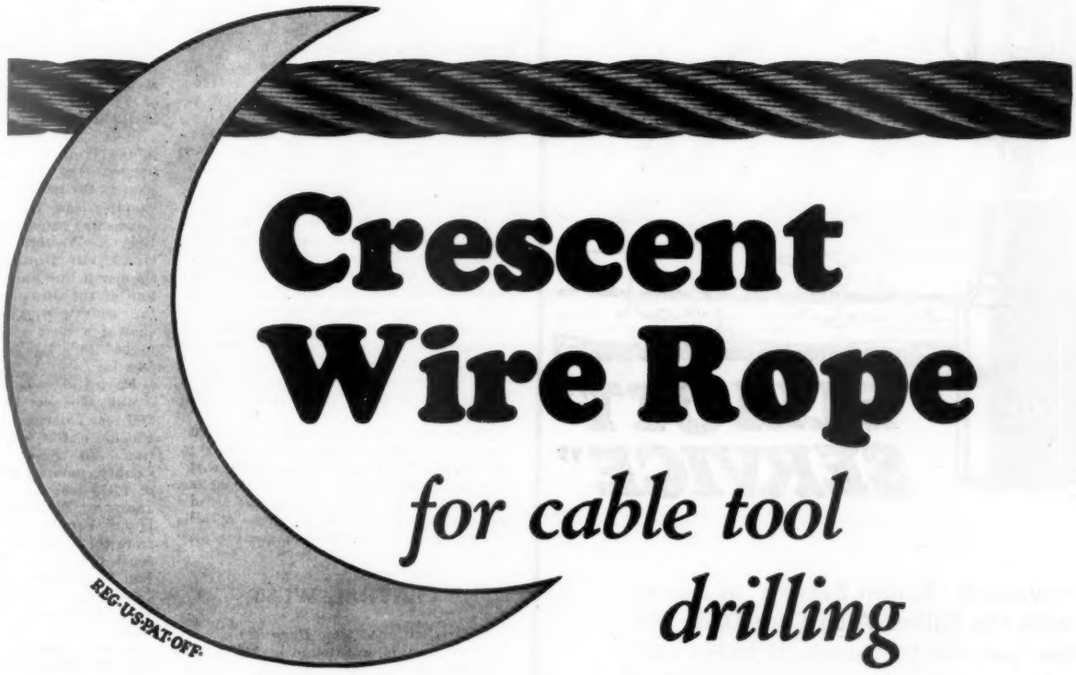
You might ask why it is cheaper to make a cracked distillate than the ordinary cut from crude but that might be explained by pointing out that an oil taken from the crude yields more gasoline when cracked than oils taken from the cracking stills and then charged back to them. So you can see the refiners can offer this type of oil at a lower price than the old 38-40 distillate so commonly used.

This cracked oil is particularly well adapted to household heating since it has a low flash and will ignite readily in the starting of burners, most of which are automatically controlled. The objection made repeatedly against such an oil is that it has a bad odor. All cracked products have a characteristic odor and this is objectionable to many people. The odor can be materially improved by treating the oil but this will add to its cost and it seems as though burners can be designed to eliminate leaks and if vapor tight connections are used in filling the customers' tanks, this factor could be well taken care of and oil supplied the trade at the lowest price. Also, this oil will be relatively dark in color but there should be no objections to this provided it is not contaminated with solid matter and the trade must recognize the tendency toward supplying a straw colored distillate as furnace oil.

Concerning Specifications

I have not discussed specifications and methods of testing in detail because I feel as though it is up to the refiner to supply you with a satisfactory furnace oil and you should not be concerned regarding its detailed specifications if the oil is satisfactory in use. The refiner will necessarily hold to certain specifications and all that are vital may be summarized as follows: He must see that the oil does not contain an excess of solid matter that would clog the burner and in the case of heavy fuels this should not exceed 2 per cent and in the case of distillates there should be no trace of solid matter. The viscosity is an important factor on heavy fuels and no figure can be set as a maximum for the various types of burners have provisions for heating heavy fuels and the only means of determining this maximum is by actual trial runs using oils of various viscosities and

*Paper read before convention, American Oil Burners Association, Detroit, Mich.



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then to set a liberal margin to allow for extreme conditions such as low temperates or the partial clogging of the feed lines. Another specification of major importance in heavy fuel oil is cold test, or the temperature at which the oil solidifies and in all cases the cold test as shown by the accepted method should not exceed 10 degrees Fahrenheit.

Where distillates are used as fuel, especially in automatically lighted installations, the open cup flash will have to be held around 160-170 and there must be a sufficient volume of the more volatile oils to give not only this flash but to ignite and furnish enough heat to vaporize and start the combustion of the heavier constituents. One specification so often given is gravity. This is entirely erroneous for gravity merely is an expression of the weight of a unit volume of the oil and oils made from Pennsylvania, Mid-Continent and California crude will each have a different gravity but will be identical in every other vital characteristic and one specification that must be discouraged is that of gravity. To accomplish a complete standardization we must discuss each other's problems and have as good an understanding of each others problems as possible, and I believe that is one of the purposes of this meeting.

There must be a complete standardization of household burners with respect to the quality of the oil used, at least within a fairly close range so that through a standardization of the burners the refiner will be able to cheapen his costs of producing such an oil through greater production.

CENTRAL WEST

(Continued from Page 58)

Top of Trenton was found at 1,400 feet. The well is not yet completed. It was drilled for natural gas and it is believed by the people of that vicinity that gas will be found in commercial quantities at least sufficient to supply fuel and light to the town and vicinity. The Roundhead Field in Hardin County, one of the best now being developed in the old Trenton Rock area and only a few miles to the northwest of the wildcat well, brings hopes that the new venture is only an extension to the Roundhead Pool. If this proves true it will mean an extensive development, as some good concerns are doing their bit in Hardin County. In McDonel Township, of this county, the Boston-Southwestern Oil & Gas Co. is drilling No. 5 on the Mary Irwin Clark farm. as well as No. 2 on the McConnell farm. The New York Coal Co. has a rig up for a second test on the Gilmore-Cockley farm. In the same area Sanford Ulrich and others are starting No. 6 on the A. B. Zimmerman farm and the Roundhead Oil & Gas Co. has started spudding at a test on the McCarthy farm.

Now that the weather is clearing up. some new work should soon be started in the Payne Field of Paulding County, on the north side of the old Trenton Rock area, as well as around Mendon, in Mercer County. On the south side of the old field, the southern part of Mercer County. as well as Shelby and Darke Counties, are to come in for their share of the activity. Additional tests are to soon be started in the extreme eastern part of Ottawa County, on Catawba Island, as well as on the mainland east of Port Clinton as far as Marblehead and south of Lake Erie. Three producing wells have already been drilled on the Island and the oil is being shipped by tank cars from Danbury.

The Oko Oil & Gas Co., of Lima, Ohio, with Mack P. Colt as president, has drilled in its fourth well 270 feet from the south line and 750 feet from the east line of the George Deverna farm, in the southeast quarter of Section 29, Perrysburg Township, Wood County, top of Trenton at 1,243 feet, and drilled 48 feet in, showing a production under pumper of 9 bbls. This territory is light, but the wells maintain their production above the average. Something like 20 wells will be drilled in the same area during the present season.

Southwest of Findlay, in Eagle Township, Hancock County, Star & Clark's No. 8 well, 200 feet from the south line and 1,200 feet from the east line of the Alice Stauffer farm, in the northeast quarter of Section 6, pumped 20 bbls. Trenton found at 1,315 feet and drilled to a total depth of 1,385 feet.

An unusually good strike has been made by the Rock Oil Co. in a test in the southeast corner of the Clemens Enneking farm, in the southwest quarter of Section 28, Washington Township, Auglaize County, and a mile directly west of the town of Minster and 7 miles east of St. Marys. Top of sand was found at 1,240 feet and drilled 46 feet in, with a flush of 50 bbls. Wells of this caliber in the Trenton should bring about activity with the drill and eventually will as soon as the roads dry up so materials and supplies can be handled. In Moulton Township, same county, along the Lake Erie & Western Railroad, near Buckland, Kelly Brothers test, 550 feet from the north line and 300 feet from the east line of the Joseph Harshbarger farm, in the southwest quarter of Section 10, showed a flush of 14 bbls. with Trenton topped at 1,177 feet and drilled 47 feet in.

Harley, Henderson and Warner's No. 5 well, 600 feet from the north line and 200 feet from the west line of the Cletus Flack, in the southeast quarter of Section 35, Scott Township, Sandusky County, pumped 10 bbls. at a total depth of 1,344 feet, or 82 feet in the sand. In Jackson Township, same county, the Hurry Up Oil Co.'s No. 6 well, 175 feet from the north line and 600 feet from the south line of the W. D. Hummell, in Section 17, pumped 12 bbls. Top of sand at 1,264 feet, and drilled 44 feet in sand. B. J. Rinebold's No. 8, in the southeast corner of his own farm, in Section 30, pumped 2 bbls. at a total depth of 1,291 feet, or 43 feet in the sand.

In Center Township, Mercer County, N. E. Master's second test, 300 feet from the north line and 900 feet from the west line of the Henry S. Lewis farm, Section 10, pumped but 1 bbl., with top of sand at 1,145 feet, and 45 feet in sand.

In the Elmore Field, in Harris Township, Ottawa County, the River Oil Co.'s No. 8 well, 1.000 feet from the north line and 600 feet from the west line of the Ernest Bussman farm, Section 14, pumped 8 bbls. Sand top at 1,255 feet, and drilled 48 feet in sand.

Central Ohio

With better weather promised, the large gas concerns operating in the Central Field, as well as the oil operators, are making ready to get busy with the drill as they all see a good year before them. For weeks high waters in the many streams through the valleys have caused shutdowns and holding up of completions of wells that were due for completion.

In Ashland County, Hanover Township. the Ohio Fuel Gas Co.'s test 1,000 feet from the north line and 660 feet from the west line of the John E. Shoudt 72 acres, Section 25, is a fair gas well. In Troy Township, same county, Hulse & Kundtz of Cleveland have drilled in a nice gas producer in a test near the northwest corner of the R. H. Hartsmiller 27 acres. Lot 1. This firm is starting a purely wildcat venture on the L. C. McClain 110 acres, Section 13, Clear Creek Township, same county. Logan Gas Co. made a location for a test near the southwest corner of the Addison Stentz 50 acres, Lot 84, Sullivan Township, same county.

In the Chatham Field of Chatham Township, Medina County, E. R. Edson Sons Co.'s No. 19, on the southwest corner of the George W. Packard No. 2 farm, Lot 3, Tract 14, got a broken sand formation at a depth of 380 feet resulting in a very small stripper.

Lorain County is not showing its usual activity, but is expected to make a much improved showing from now on until late in the fall. The Wiser Oil Co. drilled in a light gas well at a test in the northwest corner of the Charles Brozek 48 acres. Lot 30, and Daugherty Brothers' second test in the southeast corner of the E. E. Churchwood 30 acres, Lot 26, is also a light gas producer. In Huntington Township, same county, the East Ohio Gas Co.

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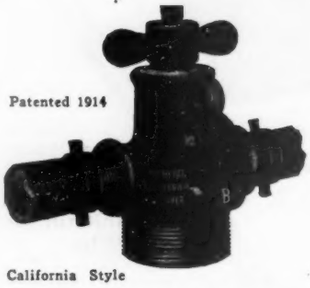

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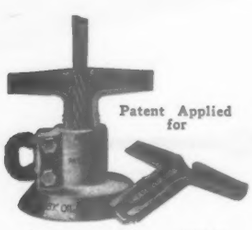

Common style, showing steel hollow top grease cup.

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is drilling a test 600 feet from the south line and 70 feet from the north line of the Catherine Cassell 45 acres, Lot 9.

In the Wooster Field, in Wooster Township, Wayne County, the Ohio Oil Co.'s No. 2 well, 300 feet from the north line and 950 feet from the east line of the Lee Martin 40 acres, Section 21, is credited with 25 bbls. from the Clinton sand. Warren Palmer and others' second test, 1,368 feet from the north line and 122 feet from the west line of the S. A. Swanson 86 acres, Section 36, Congress Township, is reported to show a volume of 3,500,000 feet of gas. In Wayne Township, W. E. Hawk and others are drilling a test in the southwest corner of the J. B. Yoder 40 acres, Section 1, while the Logan Gas Co. made a location for a test 600 feet from the north line and 500 feet from the west line of the A. J. Shisler 100 acres, Section 6, Green Township, same county.

The Arkansas Fuel Oil Co. is drilling a second test in the southeast corner of the W. H. Geib 134 acres, Lot 7, Monroe Township, Holmes County.

Bowser and others are drilling a test 400 feet from the north line and 760 feet from the west line of the H. F. Richardson 70 acres, Section 36, Troy Township, Athens County. In Carthage Township, the Fairfield Gas Co. is drilling a test 375 feet from the north line and 1,690 feet from the east line of the J. L. Yarner 158 acres, Section 3.

The East Ohio Gas Co. drilled in its second test, 880 feet from the north line and 300 feet from the west line of the John Concle 100 acres, Lot 5, Clark Township, Coshocton County, for a duster. No. 1, drilled some four months ago on this farm, proved a fairly good oil well . In Newcastle Township, same county, Bell Brothers' No. 10 well, 1,220 feet north of Oil Creek and 1,270 feet west of the Mohican River, on the Cassingham-Herbig farm, Lot. 11, is a very light gas producer.

In Strongville Township, Cuyahoga County, the East Ohio Gas Co. has started the drill at its test 1,200 feet from the south line and 1,000 feet from the west line of the E. I. Gifford 170 acres, Lot 87, and No. 1 in the southeast corner of the B. H. and E. A. Adams 108-acre farm, Lot. 50.

In Brown Township, Knox County, the East Ohio Gas Co.'s No. 16 John Snively farm, Section 34, is reported at 3 bbls. from the shallow Berea sand. In Jefferson Township, same county, J. B. Reed and others have been delayed by a fishing job at a depth of 2,650 feet at their test on the George W. Schults farm, Section 7.

The Preston Oil Co.'s No. 5 C. C. Pugh farm, Fractional Section 728, Fairfield Township, Washington County, shows for a 2-bbl. pumper.

The Schneider Oil Co.'s test on the Jacob Schneider, Section 3, Falls Township, Hocking County, is showing for 30 bbls.

In Alexander Township, Athens County, the Ohio Oil Co.'s No. 3 Dr. Alderman farm, Fractional Lot 3, is reported good for 10 bbls. after given a shot. Hawkins and others had a slight showing of oil in a test on the Oliver Davis, Fractional Section 36, Carthage Township, in the Maxon sand at 1,005 feet, and drilling deeper.

Indiana Field

Bad weather conditions had brought about almost an entire shutdown of operations in all parts of Indiana, although activity will be resumed shortly, as much leasing in advance of production has been taken up with promise of developing the acreage. In Decker Township, Knox County, the Wabash and White Rivers are so high that the country is pretty well under water.

In Logan Township, Pike County, H. Loeb & Skidmore's test in the southeast corner of the Ralph Robling farm in the quarter of Section 11, is a duster at a depth of 1,398 feet. In the same field, the Consolidated Oil Co. and others abandoned No. 10 on the J. Q. McDaniel farm, Section 22.

Illinois Fields

Wabash County is showing up better from day to day, and when the heavy rains, high water and mud disappear great activity is looked for. The finding of a commercial well on the Robert Yelton farm, in the southwest quarter of Section 5, Friendsville Township, 3 miles west and 1 mile north of Allendale, over 1½ miles west of the discovery well of years ago on the Adam Biehl farm, and a little north and west of the northern extension of the Wright Pool, is by far the best discovery since the recent opening of the Stillwell Pool northeast of Allendale and the Bass Pool a mile or so southeast of Friendsville. The Yelton well should bring about much new work in its vicinity. The Yelton well is owned by Bell Brothers and reported around 50 bbls. flush.

Another important wildcat well is starting by Henneberger and others on the Robert Liddle farm, in the northeast quarter of Section 26, Friendsville Township, over a mile southwest of Friendsville and about 2 miles southwest of the discovery well on the Bass farm, which brought about a renewal of activity in Wabash County. The Liddle test is a real wildcat and if it proves a commercial producer will mean much for the future of Wabash County. Midway between the Liddle test and the Bass well a test is starting by Miller, Lee and others on the Edward Hartwick 160 acres, in the northeast quarter of Section 25.

The well on the Franklin School lot to the southeast of Friendsville and a little northwest of the Bass well, and drilled by Joe S. Young, Jr., and others, has been cleaned out, put on the pump and reported to have put 100 bbls. of oil in tanks in 24 hours. The same firm's No. 1 on the Price farm, and just east of the school lot well, is on the pump and showing for around 100 bbls. flush.

The latest well to strike pay sand is Clark Oldendorf and others' No. 1 on the northwest corner of the J. O. Wood farm, being the south half of the southeast quarter of Section 19. Friendsville Township, and an offset to the east of the discovery well on the Bass farm. The well started slopping over about as did the discovery well on the Bass, which produced 200 bbls. the first 24 hours and the Wood well is as good, if not better. This well passed through 32 feet of sand and may yet develop into one of the big wells of Wabash County. The sand was found a few feet higher than any well drilled in its vicinity. The well of Karnes and others on the Frick lease, same section, and south of the Bass well, ran a string of 5-inch casing and will make a deep test. Joe Young, Jr., and others are drilling No. 2 on the Price lease, Section 19, north of the Bass well.

In the Allendale area of Wabash County, Foreman and others are starting No. 3 on the Cisil heirs farm, Section 1. The Eastern Gulf Oil Co. is starting a second well on the Jess Cisil east 40 acres, Section 2. Joe S. Young, Jr., and others are starting No. 3 on the Dave Price farm, Section 1, and north of Allendale. No. 1 on the Jesse Cisil of the Eastern Gulf company is due for completion. Ellison and others' second well on the Collison heirs farm, Section 12, and just east of Allendale, is due to drill in. Hupp, Duff and others of Cleveland, Ohio, are starting a test on the Dr. C. E. Gilliott lease, Section 12, and just west of No. 1 on the Collison heirs farm.

In Westfield Township, Clark County, the Ohio Oil Co.'s No. 24 well, 920 feet from the south line and 410 feet from the east line of the Samuel James farm, Section 33, pumped 4 bbls. from a shallow depth of 527 feet.

NEW FUEL ORGANIZATION

London reports a new organization, the Institution of Fuel Technology. Lord Montagu of Beaulieu has intimated his intention to join the committee. A subcommittee was appointed to draft a constitution and bylaws, and held its first session on March 26. The secretary pro tem is Edgar C. Evans, Caxton House (East), Tothill St., Westminster, S. W. 1. If possible, a fuel congress will be held in London in the autumn.

Fires . . .

that never get into the newspapers . .

FOR every fire that gains enough headway to become "news," probably a score are extinguished at the start. When small but threatening blazes break out in spite of the best fire prevention methods, they are quickly checked where first-aid protection is adequate.

And there never was a time when such control was as important as it is now. No matter how good the actual fire record of the oil industry, any spectacular fire may bring publicity that works more harm than fire itself—through exaggeration of municipal danger.

This is one reason why executives responsible for fire safety in leading oil plants have put the major burden of protection on *Foamite* equipment. One big company now has over 1000 *Foamite* Extinguishers and 100 *Foamite* 40-gallon Engines safeguarding the so-called "minor" risks—keeping small fires small, and thus out of the reach of sensational journalism.

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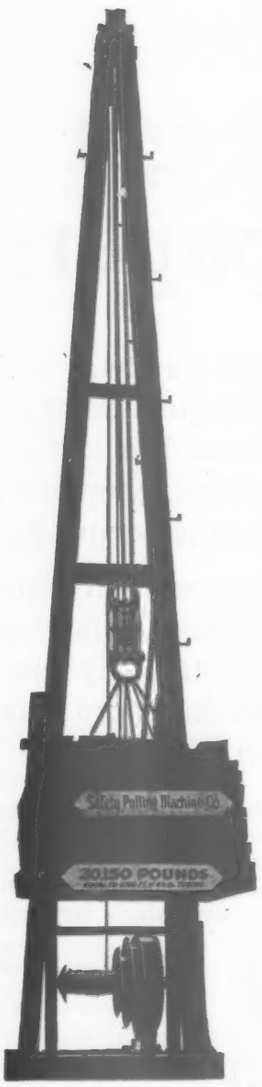
Eclipse Deepwell Pulling Machine

That one company recently purchased 6 of these machines to be used in a country 6,000 miles from the United States is proof this Pulling Machine is good.

Eclipse Deepwell up to 8000 ft. 2" Tubing Weight 3645

Wreckers also made to order, approximate weight 5000 lbs. One of our customers stated that he has pulled a weight equal to 100 tons with one of these machines.



Specifications Deep Well

Mast 8x10x36 ft., Douglass Fir A-Style Two Wheel Truck, two 16" Bronze bearing crown pulleys, 2½ Steel Pin mounted in malleable boxings. Large supporting plate 16" dia. between crown pulleys, eliminating any chance of bending pin.

Reel or Drum; 32 lb. 8¼ casing filled with concrete for winding drum, differentials banded with 3/16 band iron, brake surface 6"x40", choke brake style same as Star drilling machine.

The whole reel assembly is mounted on 2¾ square steel shaft extending clear through reel, secured by three heavy castings.

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SAFETY PULLING MACHINE COMPANY
INDEPENDENCE, KANSAS

STORY OF THE OIL PIPE LINE RELATED BY A VETERAN OFFICIAL

OIL CITY, Pa., Apr. 16.—The story of oil transportation from its beginning was sketched by a pioneer pipe line man to an interested audience when F. D. Williams, president of the National Transit Co. addressed the Oil City Industrial Club Thursday.

In his remarks relating to the business relations between producer and pipe line he set forth a custom which will be new to many young oil men in the western fields who are not familiar with the time-honored conditions of the eastern fields, and which are different from the way the producers and the purchasers conduct their affairs in the fields west of the Mississippi, where the oil is considered purchased when it is run.

Mr. Williams' address was as follows:

"As you are all doubtless aware, the first oil well was located near Titusville and completed August 27, 1859, by Colonel Drake and his associates—others followed rapidly. The oil produced was first moved in barrels with teams to the nearest shipping point, which at that time was by water down Oil Creek to the Allegheny River. The oil was loaded in barges and floated down the creek and river to Pittsburgh. As the producing fields spread over a greater field, the problem of moving it to market became more and more difficult. Early in 1865 Messrs. Samuel Van Sickel of Titusville, H. C. Ohlen and Reed & Cogswell of New York conceived the idea of transporting oil by means of a pipe line. The first pipe line, extending from Pithole to Miller farm, consisting of 6 miles of 2-inch pipe, was completed in October, 1865, and to Mr. Van Sickel belongs the credit of carrying to completion and success the first pipe line in this country.

"There were three relay stations between Pithole and Miller farm. Reed & Cogswell furnished the pumps for this first line—the steam ends were about 10 inches in diameter and 12-inch stroke, the fluid ends were about five inches in diameter and 12-inch stroke and of the flywheel type, capable of handling 20 to 40 bbls. per hour against 300 to 350 pounds pressure.

"These relay stations were abandoned later, as it was found that oil could be pumped through from Pithole to Miller Farm. The pipeage charge for this service was $1 per barrel. The projectors of this enterprise were thought to be crazy and it was freely predicted that the venture would prove a failure.

"At this time there were about 1,500 teams engaged in hauling oil from Pithole to points on Oil Creek—their charges were sometimes as high as $3 per barrel. When it was found that the pipe line was a success, the teamsters, seeing their occupation gone, tore up and destroyed the line in many places. The company was compelled to appeal to the sheriff for protection and a guard of deputies was placed along the line. The officials and employes of the pipe line company were threatened by the teamsters with all kinds of punishment if they did not leave the business and the country—the pipe line men, however, were not quitters.

The First Trunk Line

"This line from Pithole to Miller Farm was really the first trunk line built—at that time the oil was hauled from the wells to the pipe line pump station dump tanks.

"In 1866 Messrs. A. W. Smiley now of Foxburg, Pa., and George E. Constant of New York, built what was called an accommodation, or what is now termed a gathering line, taking the oil from the wells to the main or Pithole-Miller Farm line tanks. These two lines represent the beginning of the development of the present trunk and gathering systems.

As new producing fields were discovered and developed, other lines were laid from such producing fields to other delivery points, such as refineries and railroads, keeping pace with the extensions of the oil producing area. In the meantime refineries had been built along the Atlantic Seaboard, their supply of crude being moved by rail in tank cars from the producing fields in western Pennsylvania. This method was slow and expensive and not always reliable, and a pipe line from the oil country to the seaboard was talked of. The project was by some thought an impossibility, others admitted that it MIGHT be done.

First Line to Seaboard

"The first line, a 6-inch, was completed some time in 1880 from Olean, N. Y., to Saddle River, N. J., and somewhat later extended to the refineries along tidewater. This line is now a part of the New York Transit Co. system. The next seaboard line to be built began at Colegrove, McKean County, Pennsylvania, and was completed to Pine Station, Pa., in 1880, and to Philadelphia and Baltimore about 1883, and is now a part of the National Transit Co. trunk line system. A number of other trunk lines have since been built from the different points where oil is produced.

"There is now a continuous connecting system of trunk lines from the Mid-Continent fields in Kansas, Oklahoma and Texas to New York, Philadelphia and Baltimore, and also from the same fields to points on the Gulf of Mexico where crude oil can be loaded in tank ships for any port in the world. These trunk lines run continuously day and night and are as reliable as the best managed railroad in the world. The sizes of pipe used are principally 5, 6, 8, 10 and 12-inch.

How a Producer Gets Service

"The business of transporting oil by pipe line from the wells to the refiner is substantially as follows: When a well is completed and found productive, the owner sets a shipping tank, so-called, at a convenient point near the well. The oil from the well flows or is pumped into this tank. He then notifies the pipe line company that he wishes the tank connected, the latter extends its lines to and connects the tank. It also 'straps' or measures the tank and numbers it. From these measurements a table is computed showing the capacity of the tank at each one-fourth-inch from bottom to top—a copy of this table is furnished the owner and a copy is sent to the pipe line company's general office. When the tank is filled the owner notifies the gauger or pipe line company representative that he wishes the oil run on a certain day. The gauger, when he arrives, first 'thiefs' the tank—that is by means of an instrument called a thief—takes samples of the oil in the tank at different depths to determine whether or not it is what is known as merchantable oil, or oil that does not contain an undue amount of water and sediment. Assuming that the contents of the tank is found to be merchantable, he measures the depth of oil in the tank by means of a gauge pole scaled to feet, inches and quarter inches, takes the temperature of the oil, if it has been heated to settle out the water and sediment, opens the valve on the line at the tank and allows the oil to run into the pipe line company's lines and through them to the nearest station and tanks.

The Accounting System

"When the oil has all run out of the owners' tanks, the gauger measures the oil left in the tank, shuts and seals the valve, and makes out a ticket in triplicate. This ticket gives the number of the tank, the owner's name, the numbers of the wells from which the oil was produced, the name of the farm on which they are located, the temperature of the oil, and so forth. One copy of this ticket is given the owner or his representative, one copy is kept by the gauger, and one copy is wired and then mailed to the pipe line company's general office. From these tickets so wired and mailed, the amount of oil run is figured and placed to the credit of the owner or owners in accordance with a paper called a division order previously filed at the company's office authorizing it to run the oil from the wells and divide it in certain por-

Spang Weldless Drilling Jars Give Drillers a Feeling of Safety!

You are taking no chances when SPANG WELDLESS JARS are running. Made of a single piece of tough alloy steel, the welds which encourage failures and fractures are absolutely eliminated. This, together with scientific heat treatment and most careful inspection, reduces flaws to the negative.

SPANG WELDLESS JARS are being used extensively by drillers in every field—order a trial set—compare them in every way with what you are using, and we know SPANG JARS will be standard equipment for your operations in the future, too.

You can buy Spang Jars at your nearest Supply Store—over 300 oil field supply stores carry complete stocks of Spang Jars for immediate delivery.

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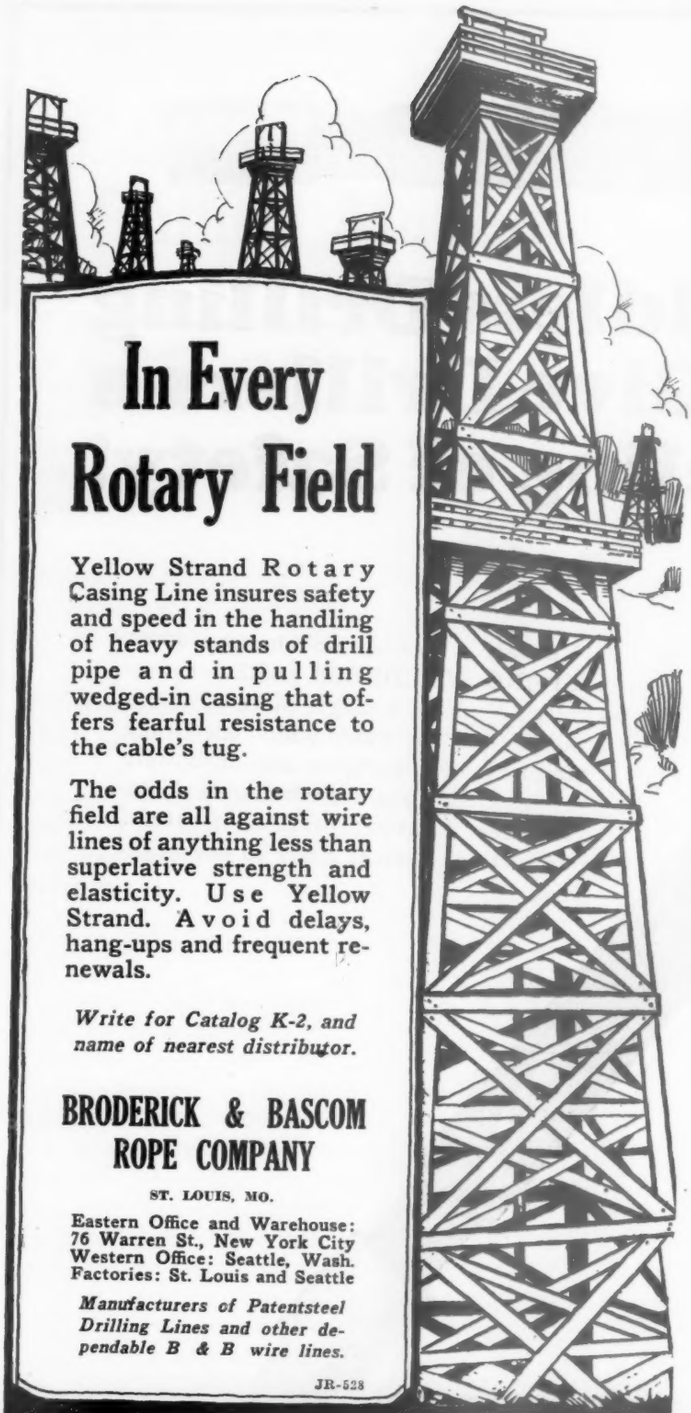
Spang Thread Protector

Protect your Tool Joints with SPANG Thread Protectors. Like all Spang products they guarantee absolute satisfaction and long, durable service.



In Every Rotary Field

Yellow Strand Rotary Casing Line insures safety and speed in the handling of heavy stands of drill pipe and in pulling wedged-in casing that offers fearful resistance to the cable's tug.

The odds in the rotary field are all against wire lines of anything less than superlative strength and elasticity. Use Yellow Strand. Avoid delays, hang-ups and frequent renewals.

Write for Catalog K-2, and name of nearest distributor.

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tions among the different owners, this division order being signed by each of the owners. The amount of oil in barrels and hundredths due each owner is then placed to his credit on the pipe line company's books, the same as a deposit of money in a bank is placed to the credit of a depositor on the books of the bank. When the owner wishes to sell his oil he first asks for his balance in the line, or in other words, the amount standing to his credit on the company's books, makes out an order similar to a check which he signs, and then sells to any buyer. The buyer will deposit this order to HIS credit, and against his credit thus established will issue to the pipe line company orders to deliver to some refiner to whom he has sold it, a given amount of oil in barrels. This order is accepted by the pipe line company, the delivery to the refinery is made, and the movement of oil from the well to the refiner completed.

Tender Shipments

"In the case of the movement through the trunk lines to the seaboard, the buyer is also a shipper, and instead of issuing a delivery order he will make a tender of shipment of a certain amount of oil consigned to some purchaser or refiner, on say the Atlantic Seaboard, after complying with the requirements of the tariffs under which the oil will be moved—these tariffs are on file with the Interstate Commerce Commission and the pipe line companies are common carriers under the jurisdiction of the Interstate Commerce Commission the same as the railroad companies.

"When a tender is made and is accepted by the pipe line company, the oil starts on its way to its final destination—a refinery at some point—which may be Oil City, Rouseville, Philadelphia or Baltimore, tenders of oil being moved in the order of their precedence.

"Oil is also moved to shipping points on the Gulf, there loaded in tank steamers and shipped all over the world.

"There are many different grades of crude oil and much difficulty is experienced in keeping them separate and the contamination of the more valuable grades reduced to a minimum.

"This is but a brief description of the methods of transportating crude oil from the wells to the final consumer—the refiner."

KENTUCKY-TENNESSEE

(Continued from Page 58)

Oil Co. in No. 3 on the C. B. Jones lease, reported conservatively at 25 bbls. although it had a much larger flush production which could not be put in storage as all available tanks have been filled. The Paragon Development Co. is now laying a line to the pool and when the tanks are emptied a better estimate can be given on the new field, which looks like one of the good ones of the county. No. 4, same lease, is nearing the pay sand. Ziegler Brothers' No. 1 Pedigo, offsetting No. 3 Jones, is also due for completion.

Out of Glasgow on the Thompkinsville Road Finch and others completed and shot No. 1 on the Matthews lease, estimated at 8 bbls.

In the Hall-Baker Pool Ziegler Brothers' No. 1 Boyd struck pay sand 52 feet under the Black shale, with 22 feet of sand, the hole filling up 250 feet with fluid. Being tubed to put on the pump, it made a showing for a very good producer. Harrington & Norris Brothers' No. 3 White & Smith lease, has struck a flow of salt water which they are making an effort to pump off. Consolidated Gas Co. is due to complete No. 17 H. W. Duff.

In the Emery-Moore Pool, the Houchins Leasehold Co. struck a freak streak of oil in No. 12 Ziegler at 240 feet and is drilling deeper. Fred C. Moore is due in with his No. 13 on his own farm and Philip Kopet is due to complete his No. 1 on the Wilson lease.

In the Gorby Pool, the Holand Oil & Gas Co.'s No. 15 Casaday, is completed and shot and estimated at 10 bbls. Lewis J. Emery, Jr., & Sons' No. 24 Depp & Greer lease, is down below 1,000 feet and making a deep test. Jacob Best, trustee, struck a duster in No. 5 on the Sanders lease. The Wood Oil Co.'s No. 1 Sink Smith, is a duster. Ziegler Brothers struck salt water 40 feet under shale at No. 1 on the Carver.

Owensboro District

The Chicago Petroleum Syndicate's No. 3 Guenther Gant, in the Swope Pool, in the Owensboro district, after being put on the pump is reported to have made two 100-bbl. tanks the first pumping from the Barlow sand. In the same pool Bolling & Loman Brothers' No. 1 Jo Bob Ellis lease, was shot in 15 feet of Barlow sand. Prior to being shot the well had 150 feet of fluid and made a very good showing and is expected to settle down to a 15-bbl. producer. W. E. Stevenson has charge of the operations. He found a trace of oil in the Jackson sand, which is rarely found in that locality, but continued to the Barlow sand, where the good showing was found at a depth of 550 feet. The well is 800 feet south of the Chicago Petroleum Syndicate's No. 3 on the Guenther-Gant and is but a short distance from a shaft of the Ellis coal mine at Ellis station on the I. C. R. R., in Ohio County. Bolling and Loman Brothers are new oil men in the Owensboro district, but have extensive holdings in the Bowling Green Field of Warren County. The Ellis tract embraces 100 acres, and from appearances ought to be good for several good producers. This well also indicates that the producing territory extends westwardly.

In the Pellville Pool, C. A. Leeper's No. 7 Lon Helm, 400 feet north of No. 6, is a remarkable well for the field and estimated with a flush of around 125 bbls. from the Jett sand. The well pumps more oil than was first expected. No. 6 is reported to maintain a steady production of 40 bbls. daily and No. 7 is a better producer. No. 8 has been started 400 feet northwest of No. 7. Mr. Leeper is an old-time Trenton Rock operator, having operated extensively in both the Lima and Indiana fields, as well as in Pennsylvania and Illinois.

C. E. Daugherty and others brought in No. 9 on the Widow Crow lease of 153 acres. It is 400 feet east of No. 4 and rated as a 15-bbl. settled pumper, from the Barlow sand. No. 10 has been started on the same farm about 200 feet north of No. 2 on the Laura Mercer.

The Chicago Petroleum Syndicate has started a test on the Mrs. Nannie Brown, in the Swope Pool and north of Bolling & Loman Brothers' No. 1 Jo Bob Ellis. Same company has started No. 4 on the Guenther-Gant lease and just east of the No. 1 Ellis lease.

Daugherty and others' No. 9 is one of the best wells yet drilled on the Widow Crow lease but owing to its extreme easterly location, expert oil men of the field had looked for a dry hole, and they were astonished when such a fine Barlow sand well was drilled in. This well shows that the Barlow sand has a width of 4,000 feet from east to west.

The Wah-Shah-She Oil Co. failed to find a pay in the Jett sand in No. 2 on the Colonel Powels lease, in the Swope Pool, and drilling to the Barlow sand. It is located 400 feet south of No. 1.

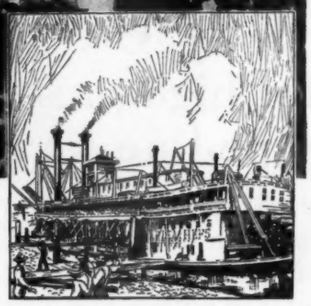
Daviess County Oil Co.'s No. 7 on the south line of the J. L. Howard 20 acres and between Nos. 1 and 2, has been drilled in and is a duster.

The Pennsylvania-Indiana Oil Syndicate is drilling No. 4 on the R. B. Powers 100 acres, in the Swope Pool, offsetting No. 1 on the R. B. Powers 86 acres. Same company is working at a test on the W. Griffith 270 acres, in the same pool.

Cumberland-Monroe Counties

Cumberland County came to the front with another gusher, which caught fire, totally destroyed the drilling outfit. This is Sam K. Baird and Hickman's second test on J. Grider farm, in the Crocus Creek district. It was completed at a depth of 293 feet and started flowing about as soon as the pay was tapped and looked better than No. 1 which was reported at 200 bbls.

In the Crocus Creek district, Sam K. Baird and Hickman found the first Sunnybrook sand dry in No. 2 J. H. Morgan



Forty-eight Years ago

A Mississippi packet brought to this old plantation a shipment of Byers Pipe

ABOUT twenty miles above New Orleans, on the east bank of the Mississippi, stood the old plantation home of the Destrehans. Surrounding it, all the way from levee back to the swamps, were waving fields of sugar cane.

In 1878 a packet boat brought to this plantation a shipment of Byers Pipe which had come down the river from Pittsburgh.

The year was a memorable one in those parts, for the Mississippi Delta was swept by a terrifying epidemic of yellow fever. The cabin of the boat which brought the pipe was cluttered with the corpses of fever victims who had died on the way from Memphis.

In this cabin, the plantation manager receipted for the pipe and proceeded to install it for supplying water from the river to the sugar factory, half a mile distant.

The pipe remained in the moist loam for forty years. When dug out in 1918, the scene had greatly changed. The cane fields were gone. A modern petroleum refinery had replaced the old sugar factory, burned to the ground in 1912. *But the pipe was still good. It had suffered so little from corrosion that every foot of it was salvaged for use about the new refinery.*

Better Line Pipe and Tubing

Besides its great rust resistance, genuine wrought iron pipe will withstand vibration, shocks and abrasion to a much greater degree than steel. Wrought iron, in short, "wears" better, no matter where you place it.

Thus for line pipe through swampy country and "bad lands," it will give the longest life, with the smallest maintenance expense. For tubing, it is unsurpassed, outlasting cheaper pipe many times.

Byers Pipe is guaranteed to be genuine old-fashioned wrought iron of the highest grade, made today exactly as it was 50 or 60 years ago.

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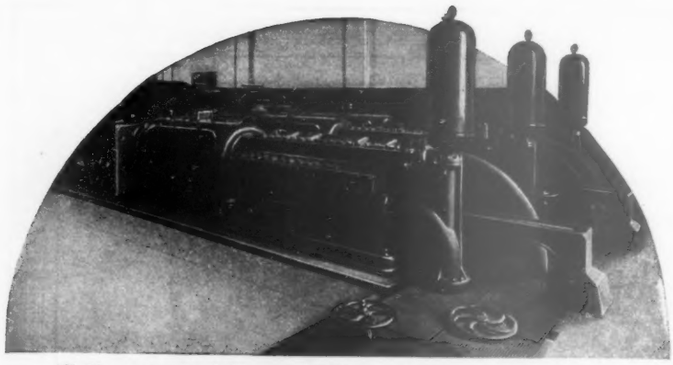

5½-6½ inch by 24 inch Horizontal Triplex Double-plunger Oil Pipe-line Pump. Capacity with 6½ inch plungers, 32,000 barrels per 24 hours at 47 r.p.m. against 700 lb. per sq. in. One of 77 Worthington Forged-fluid-end Pumps supplied to a prominent pipe line company.

Unequalled

for high-pressure pipe-line service

EVERY detail of the Worthington forged oil-end pump has been designed and fabricated to give the highest degree of strength and mechanical excellence, combined with proper hydraulic efficiency. Wherever used it has proved its pre-eminence, especially on the highest pressures.

Some of the outstanding points of superiority are:

1. Freedom from breakage in oil-end
2. Homogeneous forged oil-end eliminates leakage and sweating
3. Pressure joints minimum in number and of greatest tightness
4. Gaskets on pressure side of pump practically eliminated
5. No studs to break off in making pressure joints
6. Heights of oil-end above center line of pump less than obtained in any other construction. This minimizes suction lift and makes it possible to draw the oil from the bottoms of the tanks with maximum volumetric efficiency
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8. Straight flow, as opposed to reversal of direction
9. No long, crooked passages
10. Ball valves of hardened steel with steel seats, readily accessible

Standard capacities range up to 50,000 barrels per 24 hours, standard pressures up to 800 lb. per sq. in. but pumps for any required capacity and pressure can be readily supplied. Ask for Bulletin 29-D-1302.

WORTHINGTON PUMP AND MACHINERY CORPORATION
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and are now drilling to the Cave sand.

Doctor Lang's test on the John Finley, on Williams Prong, was found dry in the first Sunnybrook sand and has been pulled out and abandoned.

In the Kettle Creek district, A. S. McClintock and others' No. 10 Millard Kerr, has been drilled to a depth of 865 feet and is dry in the lower sand. A fair showing was encountered in a stray sand and will be plugged to the bottom of this stray sand and put on the pump. Estimated at 5 bbls. from Stray sand.

Other Developments

Warren County failed to report any completions for the week. P. H. Lavelle struck a dose of salt water in his No. 8 on the W. R. Hinton farm, at 485 feet and is now pumping it in an effort to exhaust the salt water. Onsel Brothers are drilling No. 5 C. G. Davenport and No. 12 Mary Ferguson. Brand & Henderson are working at No. 6 J. M. Morgan.

The Lincoln Oil Producing Co. is drilling a test on the Holeman farm in Simpson County.

Four completions were reported from the Scottsfield Field, in Allen County. Owens and others' No. 7 A. A. Davenport, 2 bbls. at 345 feet. The West Penn Oil Co.'s No. 12 G. W. Pearson was drilled to a depth of 340 feet and is dry. R. A. Stohr has a 1-bbl. well in No. 6 W. L. Motley, at 380 feet. The American National Bank Co.'s No. 13 Phoebe Oliver, is a very light pumper at 318 feet.

EASTERN FIELDS

(Continued from Page 60)

grit. In Section 23, Jefferson Township, Noble County, Joseph Saling & Co.'s test on the John A. Miller farm is a gasser. In Section 18, Enoch Township, Oron C. Dunn & Co. have a very light pumper at a second test on the Louis Cornett farm. In Section 33, Pleasant Township, Perry County, the Allegheny Oil Co. has started to drill No. 11 on the Elizabeth Berrisford farm.

Southwest Pennsylvania

In Richhill Township, Greene County, the Carnegie Natural Gas Co. has a gasser in the Big Injun sand good for 1,600,000 feet at a test on the J. L. Barney heirs farm. In Springhill Township, the Peoples Natural Gas Co. has a Big Injun sand gasser on the Mrs. Patrick Taylor farm. In Aleppo Township, the Green Creek Oil & Gas Co. has a 5-bbl. pumper in the Big Injun sand at a test on the Bert Lohr farm.

In Washington Township, the Philadelphia Gas Co.'s test on the William Finch farm is a gasser in the Gordon sand. In Morris Township, Myers, Long & Co. have a gasser in the same formation at a second test on the Cora Hawkins farm. In Springhill Township, W. M. Bissett & Co. drilled old No. 1 on the Etta McGuffey farm deeper and is a gasser in the Big Injun sand.

Duster in Beaver County

In Ohio Township, Beaver County, Reed & Co.'s test on the G. L. Dawson farm is a duster, having been shot and failed to respond.

BIGGEST RESERVOIR HOLDS 4,000,000 BBLS.

LOS ANGELES, Calif., Apr. 17.—Oil is flowing into the largest petroleum reservoir in the world the Pan American Petroleum Co.'s pumps pumping fuel oil from the Pan American refinery at Watson into the 4,000,000-bbl. concrete reservoir at Lomita.

The reservoir was completed only a few days ago, after a period of construction lasting more than eight months. It was started when the construction of the trans-Ridge pipe line from the Midway fields, combined with the phenomenal production of the Inglewood Field made it necessary for the Pan American to add to its storage facilities in the Los Angeles basin.

The reservoir is located about halfway between the Watson refinery and the San Pedro marine terminal of the Pan American. Its primary purpose, it is said, is for the storage of fuel oil for shipment from Los Angeles Harbor.

Some interesting figures on the dimensions of the reservoir and the amount of material entering into its construction are given as follows:

Dirt excavated, 323,000 yards.
Acres covered by reservoir, 21½.
Lumber used, 2,206,960 board feet.
Roofing used, 704,000 square feet.
Woven wire mesh for concrete reinforcing used, 798,000 square feet.
Cement used, 74,000 sacks.
Rock and sand used, 13,820 cubic feet.

The length of the reservoir, inside measurement, at the top of the slope is 1,375 feet. The length at the bottom of the slope is 1,255 feet. The width at the top of the slope is 498 feet, the width at the bottom of the slope is 378 feet. Depth from top of slope at the edge is 40 feet, and the depth at the center of the reservoir is 42 feet.

WELL IS GREATEST IN REFINING VALUE

(Continued from Page 88)

quirements of approximately 4,000 domestic burners during the winter months.

The trend in gas oil production at the present time is to use that fraction of the crude for cracking or sell it to other refiners with cracking equipment. If sold to manufacturers of artificial gas, a 5 per cent yield would supply the gas requirements of several hundred homes daily.

Fuel Oil Residuum

In the accompanying distillation test it will be noted that the gravity of the fuel oil residuum is in excess of 28 degrees Baume gravity. Fuel oil of this gravity provided the cold test permits is now often used in domestic burners. In the Mid-Continent Field the average gravity of fuel oil sold as fuel in competition with coal is less than 20 degrees Baume.

This is due to the fact that in their straight distillation and cracking processing the refiners endeavor to secure all the lighter ends of the crude for the production of light end products which are also higher in price.

Due to this fact it is doubtful if a 28-degree Baume residuum would ever be obtained and sold as such in the refining of Garber crude. If this was done, however, it would mean a daily production of 8,159 bbls. of fuel oil in the straight distillation process.

The bulk of the fuel oil output in the Mid-Continent which is not cracked is sold to the railroads where it is used in place of coal. For this purpose it is roughly estimated that 3 bbls. of fuel oil is equal to one ton of coal. This means that the Garber well based on its 10-day flow was equivalent to a coal mine producing 2,719.73 tons of coal daily.

The results obtained with this fuel oil by railroads varies rather widely. It has been estimated, however, that for the entire country a barrel of fuel oil will generate the steam power necessary to drive an engine 4 miles.

If this estimate is accepted the Garber well furnished the fuel for a total of 32,636 miles. Considered from another angle the fuel was sufficient for 100 locomotives, each traveling 326.36 miles daily.

LOUISIANA-ARKANSAS STORAGE

Crude oil in storage in South Arkansas March 1, 1926.

	Bbls.
Smackover oil in steel storage	7,333,458
Smackover oil in earthen storage	19,791,000
Smackover oil in field storage	2,399,510
El Dorado oil in steel storage	2,433,500
Total	31,957,468

Storage increased by 180,000 bbls. in the Smackover area during the month of February.

Crude oil stocks on hand in the North Louisiana fields on March 1:

	Bbls.
Bellevue	131,000
Caddo	4,609,000
Cotton Valley	350,600
DeSoto	375,000
Red River	966,000
Haynesville	4,794,000
Homer	4,639,000
Total	15,633,070

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In every
District

Process Patented

A wire to us will bring our nearest field expert to see you, tomorrow, or possibly even *today,* without obligation.

He will run tests to show you what TRET-O-LITE will do, will recommend the type of installation suited to your conditions, will superintend its construction (no doubt from materials already on your lease), will instruct one of your men in its operation.

TRET-O-LITE recovers ALL the oil from either fresh emulsion or tank bottoms, at minimum cost. That's why it is rapidly becoming the *universal* method.

WM. S. BARNICKEL & COMPANY
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Offices and Plant: Webster Groves, St. Louis County, Mo.

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MATHIESON Chemicals

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THE Mathieson Hypochlorite Process is steadily gaining favor among oil refiners and is in successful operation in an increasing number of plants throughout the United States.

The refining of gasoline and kerosene with Hypochlorite involves no expensive changes or additions to existing equipment and shows many distinct advantages over the long-established acid-alkali treatment. The Hypochlorite of Lime solution, which is made up at the refinery from Liquid Chlorine, presents no difficulties in its preparation or in its final disposal after use.

Our extensive facilities for the production and transportation of Liquid Chlorine enable us to give the best of Service to all refiners using our process. We also produce and market direct to the petroleum industry the following standard chemicals: Caustic Soda, in solid form and in tank cars of liquid solution containing 50% of Sodium Hydroxide; Bicarbonate of Soda, for all foam type fire extinguishers; Bleaching Powder, sometimes used in making up Hypochlorite solutions; Soda Ash, Anhydrous Ammonia and Aqua Ammonia.

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Caustic Soda Liquid Chlorine Bicarbonate of Soda Anhydrous Ammonia

Soda Ash - Bleaching Powder Modified Virginia Soda Aqua Ammonia

Deal Direct with the Manufacturer

DISTINGUISHED MEN MAKE UP ENGINEERS' NATIONAL COMMITTEE

The national committee of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers has just been announced by F. Julius Fohs, chairman of the division. It is made up of the following members:

A. W. Ambrose, Production Engineer, Empire Companies, Bartlesville, Okla.

W. E. Badger, Vice President, Illinois Pipe Line Co., Findlay, Ohio.

Amos L. Beaty, Chairman of the Board, The Texas Company, New York.

R. D. Benson, formerly chairman of the board, Tide Water Oil Co., New York.

A. D. Brokaw, consulting geologist, Brokaw, Dixon, Garner & McKee, New York.

Charles B. Buerger, general manager, Gulf Refining Co., Pittsburgh, Pa.

D. S. Bushnell, (vice chairman, Petroleum Division, A. I. M. E., for transportation) president, Buckeye Pipe Line Co., New York.

E. P. Campbell, production engineer, Pure Oil Co., Tulsa, Okla.

E. M. Clark, director, Standard Oil Co. of New Jersey, New York.

E. W. Clark, vice president, Union Oil Co., Los Angeles, Calif.

George S. Davison, president, American Society of Civil Engineers, and president, Gulf Refining Co., Pittsburgh, Pa., first vice president, A. I. M. & M. E.

E. L. DeGolyer, president, Amerada Petroleum Corp., New York.

T. G. Delbridge, chief of research department, Atlantic Refining Co., Philadelphia, Pa.

H. C. Dickinson, U. S. Bureau of Standards, Washington, D. C.

Henry L. Doherty, Henry L. Doherty & Co., New York.

Gustav Egloff, director of research, Universal Oil Products Co., Chicago, Ill.

Robert S. Ellison, vice president, Midwest Refining Co., Casper, Wyo.

E. L. Estabrook, production engineer, Pan American Eastern Corp., New York.

W. S. Farish, president, American Petroleum Institute and president, Humble Refining Co., Houston, Tex.

Charles Fitzgerald, general superintendent, Pure Oil Pipe Line Co., Dallas, Tex.

F. Julius Fohs, (chairman, Petroleum Division, A. I. M. E.), vice president, Humphreys Corp., New York.

David M. Folsom, assistant to president, General Petroleum Co., San Francisco, Calif.

H. R. Gallagher, vice president, Shell Co. of California, San Francisco, Calif.

James H. Gardner, (vice chairman, Petroleum Division, A. I. M. E., for production), president, Gardner Petroleum Co., Tulsa, Okla.

Frank A. Herald, (chairman, Mid-Continent section, Petroleum Division, A. I. M. E.) Herald Brothers, geologists, Tulsa, Okla.

H. H. Hill, chief peroleum engineer, U. S. Department of Commerce, Washington, D. C.

R. C. Holmes, president, The Texas Company, New York.

A. E. Humphreys, president, Humphreys Corp., Denver, Colo.

E. W. Isom, vice president, Sinclair Refining Co., New York.

Joseph Jensen, (chairman, Southern California section, A. I. M. E., Petroleum Division), geologist, Associated Oil Co., Los Angeles, Calif.

K. R. Kingsbury, president, Standard Oil Co. of California, San Francisco, Calif.

C. H. Kountz, vice president, Prairie Pipe Line Co., Independence, Kans.

John Lovejoy, vice president, Amerada Petroleum Corp., Tulsa, Okla.

A. C. McLaughlin, vice president, Associated Oil Co., San Francisco, Calif.

B. O. Mahaffey, vice president, A. I. M. E., president, Silurian Oil Co., St. Louis, Mo.

Van H. Manning, Petroleum Securities Corp., Forest Hills, L. I.

E. W. Marland, president, Marland Oil Co., Ponca City, Okla.

Walter Miller, general manager, Marland Oil Co., refining department, Ponca City, Okla.

C. H. Osmond, (vice chairman, Petroleum Division, A. I. M. E. for refining), consulting petroleum geologist, New York.

Thomas A. O'Donnell, chairman of board, California Petroleum Corp., Los Angeles, Calif.

Charles L. Parmelee, consulting engineer, New York.

A. W. Peake, general superintendent, production department, Midwest Refining Co., Casper, Wyo.

J. Edgar Pew, vice president, Sun Oil Co., Dallas, Tex.

Frank Phillips, president, Phillips Petroleum Co., Bartlesville, Okla.

Joseph E. Pogue, (vice chairman, Petroleum Division, A. I. M. E., for economics). Consulting engineer, New York.

Mark L. Requa, mining engineer, San Francisco, Calif.

Rear Admiral H. H. Rousseau, Federal Building, Los Angeles, Calif.

Walt M. Small, (representative Petroleum Division, Mexico). Chief geologist, Cia Petrolera del Agwi, Tampico, Mexico.

George Otis Smith, director, U. S. Geological Survey, Washington, D. C.

J. W. Steele, petroleum engineer, U. S. Geological Survey, Casper, Wyo.

John R. Suman, vice president, Rio Bravo Oil Co., Houston, Tex.

T. E. Swigart, (vice chairman, Petroleum Division, A. I. M. E., for production engineering.) Production engineer, Shell Co. of California, Los Angeles, Calif.

W. C. Teagle, president, Standard Oil Co. of New Jersey, New York.

F. M. Towl, president, Southern Pipe Line Co., New York.

M. M. Valerius, M. M. Valerius Co., Tulsa, Okla.

A. C. Veatch, president, Sinclair Exploration Co., New York.

F. H. Wickett, chairman of the board, Pan American Eastern Petroleum Corp., New York.

C. B. Watson, assistant to president, Pure Oil Co., Columbus, Ohio.

C. P. Watson, secretary, Petroleum Division, A. I. M. E., New York.

KENTUCKY PRODUCTION DURING FEBRUARY

By T. S. Scott

Secretary Kentucky Oil Men's Association

Production of crude petroleum in Kentucky during February, 1926, was as follows:

County—	Output
Allen	19,452.02
Barren	22,885.33
Bath	982.15
Clinton	834.19
Cumberland	3,461.03
Daviess	1,603.71
Elliott	1,005.10
Estill	30,803.44
Floyd	1,106.31
Hancock	2,694.26
Hopkins	1,508.80
Jackson	242.26
Johnson	74,532.93
Knott	387.10
Lawrence	51,859.41
Lee	120,735.89
Magoffin	60,957.49
McCreary	149.09
Menifee	139.31
Monroe	893.50
Morgan	791.31
Ohio	18,564.25
Owsley	1,366.53
Powell	14,397.81
Simpson	442.42
Warren	35,083.38
Wayne	9,786.46
Wolfe	3,632.66

OUR BRITISH EXPORTS GROW

Petroleum imports into Great Britain during the four weeks ending February 22 amounted to slightly less than the average four weekly total, at 91,500,000 imperial gallons, but the proportion coming from the United States (36,000,000) amounted to 40 per cent, slightly better than usual. The National Oil Refineries made the largest importation of the period. An American company was second, and seven other companies participated in the business.

N. LOUISIANA-ARKANSAS

(Continued from Page 50)

at 1,512 feet. Gossett and associates' No. 1 Cosden, Section 21-15-19, is waiting on a standard rig at 1,460 feet. Same operators' No. 1-A Thompson, Section 22-15-19, cored water sand at 1,480 feet and will deepen. El Dorado Union Oil Co.'s No. 1 Hall, NW cor. NE SW, Section 31-15-19, is drilling at 1,450 feet. Magnolia Petroleum Co.'s No. 1 Watson, SW cor. NW SW, Section 31-15-19, is drilling at 1,750 feet.

Nevada County

Humble Oil & Refining Co.'s No. 2 Ellis, Section 2-14-21, was the only completion recorded in Nevada County last week. It was completed for a 150-bbl. well on the pump from sand at 1,230-33 feet. Same company's No. 4-A Graves, Section 1-14-21, is drilling below the 1,000-foot level. Grayson and associates' No. 1 Graves, Section 2-14-21, is shut down in gummy shale at 1,350 feet waiting for orders. Smitherman and McDonald's No. 4 C. W. Waters, Section 2-14-21, had sand at 1,183-90 feet and is waiting on a standard rig. Steele and associates' No. 1 Haynie, Section 1-14-21, is drilling at 250 feet.

Scattered Wildcats

Grassy Lake Oil Association's No. 1 Gun Club in Hempstead County, was dry at 2,275 feet, and was abandoned. Humble Oil & Refining Co.'s No. 3 Bodcau fee, Section 19-16-23, Lafayette County, was a failure in the Nacatoch sand at 1,288 feet and was drilled to 1,350 feet and then abandoned. Arkansas Fuel Oil Co.'s No. 3 Red River Lumber Co., Section 7-19-24, is fishing for the drill stem at 2,640 feet. Gulf Refining Co.'s No. 1-E Red River, Section 10-19-24, has been carried in error as drilling, but is still a location.

Pine Prairie Oil Co.'s No. 2 Pine Prairie, Section 1-17-6w, has been abandoned and the derrick moved off. Magnolia Petroleum Co.'s No. 1 Calion Lumber Co., Section 29-15-14, Calhoun County, is drilling in gumbo at 4,285 feet. Southern C. O. P. Co. cemented the 12½-inch casing at 420 feet at No. 1 Calion Lumber Co., Section 1-16-14, Calhoun County. In Clark County, R. O. Lovett's No. 2 Arnold, Section 12-9-20, formerly Virgil Heath's No. 1, is drilling at 720 feet. Haley and associates cemented the 8-inch casing at 1,757 feet at their Cleveland County test, No. 1 Moore, Section 29-9-10, and are drilling out the plug.

In Columbia County, J. E. Crosbie's No. 1 Jones, Section 36-15-20, is drilling in gumbo at 1,500 feet. Gorden and associates' No. 1 Jones, NW cor. SE SE, Section 36-15-20, is a derrick. Haynesville Trust Co.'s No. 1 Wingfield, Section 18-19-19, is drilling at 500 feet. Hude and Aarnes' deep test, No. 2 Brown, Section 13-15-20, cemented the 6-inch at 3,297 feet and the total depth of the hole is 3,300 feet, steel line measurement. Kentucky-Arkansas Petroleum Co.'s No. 1 Peter Doss, Section 29-19-20, is shut down for fuel at 2,079 feet. In Miller County, Lenze and associates are fishing for the bit and collar at 1,400 feet at No. 1 Dale, Section 25-15-26.

Urania Field

By a margin of only 4 bbls. Urania outdistanced Lisbon during the past week in new production. Urania's seven new wells were completed with a combined production of 1,085 bbls.

J. S. Abercrombie & Co. completed two nice producers on their M. M. King lease in Section 25-10-1e. No. 5 was completed in 5 feet of sand topped at 1,542 feet and is making 300 bbls. naturally. No. 3 had the sand at 1,505-10 feet and is flowing 250 bbls. daily.

B. & B. Drilling Co.'s No. 1 Urania, Section 7-10-2e, in the northern extension of the pool, was the best of the lot. It is making 400 bbls. naturally from 5 feet of sand topped at 1,510 feet. Explorers Oil Corp.'s No. 1 Keith, Section 36-10-1e, is flowing 30 bbls. daily from sand at 1,521-30 feet. Natural Gas & Fuel Co.'s No. 3 H. Tullos, Section 26-10-1e, is flowing 15 bbls. daily from sand at 1,491-94 feet. Ozley and associates' No. 1 fee, Section 25-10-1e, is flowing 50 bbls. daily from 8 feet of sand topped at 1,542 feet.

O. F. Whittaker's No. 2 King, Section 36-10-1e, was the only well completed last week that had to be produced with the pump. It is pumping 40 bbls. daily from sand at 1,530-33 feet.

Louisiana Oil & Refining Corp.'s No. 4-A Tremont, Section 28-10-2e, 2 miles west of Tullos, missed the sand and was abandoned at 1,656 feet. Rowe and associates' No. 1 Urania, Section 5-10-2e, was another failure. It cored salt water sand at 1,565 feet and was drilled on down to 1,717 feet and then abandoned.

On the Abercrombie's King lease, in Section 25-10-1e, No. 4 is drilling below the 1,500-foot level; surface casing was set at No. 6 at 100 feet, and a derrick is standing for No. 9, NE cor. SW SE. Arizola Petroleum Co.'s No. 4 Tannehill, SW cor. NW NW, Section 36-10-1e, is blowing out and estimated to be making 5,000 bbls. of salt water daily from sand at 1,527 feet. No casing had been set at the well. Same company's No. 3, is drilling below 1,000 feet. Atlantic's No. 3 Tullos, Section 26-10-1e, tested salt water at 1,533 feet, and the hole is being plugged back to 1,529 feet to try and save the well. Ayers and associates' No. 3 Urania, Section 13-10-1e, was a dry hole in sand at 1,567-70 feet and is shut down for orders.

B. & B. Drilling Co.'s No. 2 Urania, SW SE SE, Section 7-10-2e, is a derrick. Bailey and associates' No. 1 Holmes, NE SE NE, Section 26-10-1e, is a derrick. Six-inch casing was cemented at 1,525 feet at Carlton and Tharpe's No. 1 Kyle and Davis, Section 25-10-1e. O. W. Clark's No. 1 Russell, Section 25-10-1e, is waiting for the cement to set at 1,544 feet. Clark's No. 3 Tullos, Section 23-10-1e, is drilling at 1,300 feet. Daniels and associates' No. 2 H. Tullos, Section 25-10-1e, is a derrick. Degman and Youngblood have a derrick pattern built for No. 1 Hardtner-Tannehill, SW NW SE, Section 8-10-2e, one-half mile northeast of production.

Waiting for Casing

Dixie Oil Co.'s No. 5 Urania, Section 24-10-1e, is waiting for the casing to set at 1,561 feet. J. Q. Graves' No. 1 King, Section 25-10-1e, is four feet in sand topped at 1,542 feet and is waiting for a standard rig with 1,000 feet of oil in the hole. A. E. Hudson moved the derrick from No. 1 Urania, Section 7-10-12e, to No. 3 Urania, NW NE SE, which is being rigged up. Hunt and associates' No. 3 State, Section 26-10-1e, has started drilling and the surface casing is being set at 100 feet. Same operators' No. 7 Tullos heirs, Section 26-10-1e, is being bailed to test five feet of sand encountered at 1,487 feet, and No. 8 is a derrick. Eight and one-quarter-inch casing was set at 1,488 feet at their No. 9 Tullos heirs. Five miles east of Tullos, S. S. Hunter's No. 2 Louisiana Central Lumber Co., Section 27-10-2e, tested salt water at 1,573 feet and is shut down at 1,620 feet. Jones and associates' No. 1 Norris, Section 25-10-1e, is a derrick. Keene and Woolf are rigging up at No. 3 Urania, SE cor. NE NW, Section 19-10-2e.

Louisiana Oil & Refining Co.'s No. 5-A Tremont, Section 35-10-1e, is coring at 1,543 feet and the 12½-inch casing was cemented at 102 feet at No. 31-B Tremont. Little River Oil Co. set 10-inch casing at 104 feet, and is drilling ahead at 500 feet at No. 1 Ratcliff, Section 26-10-1e. Love and associates are drilling out the plug at 1,481 feet at No. 2 Zimmerman, Section 25-10-1e. Minnesota Oil Corp.'s No. 1 J. M. Cotton, Section 25-9-2e, is drilling at 600 feet. Mistrot and associates' No. 1 Russell, Section 26-10-1e, has 700 feet of oil in the hole from sand at 1,549-54 feet and is waiting for a standard rig. Nelson and associates are arranging to test sand at 1,545-54 feet at No. 1 Bryant and Harvey, Section 26-10-1e.

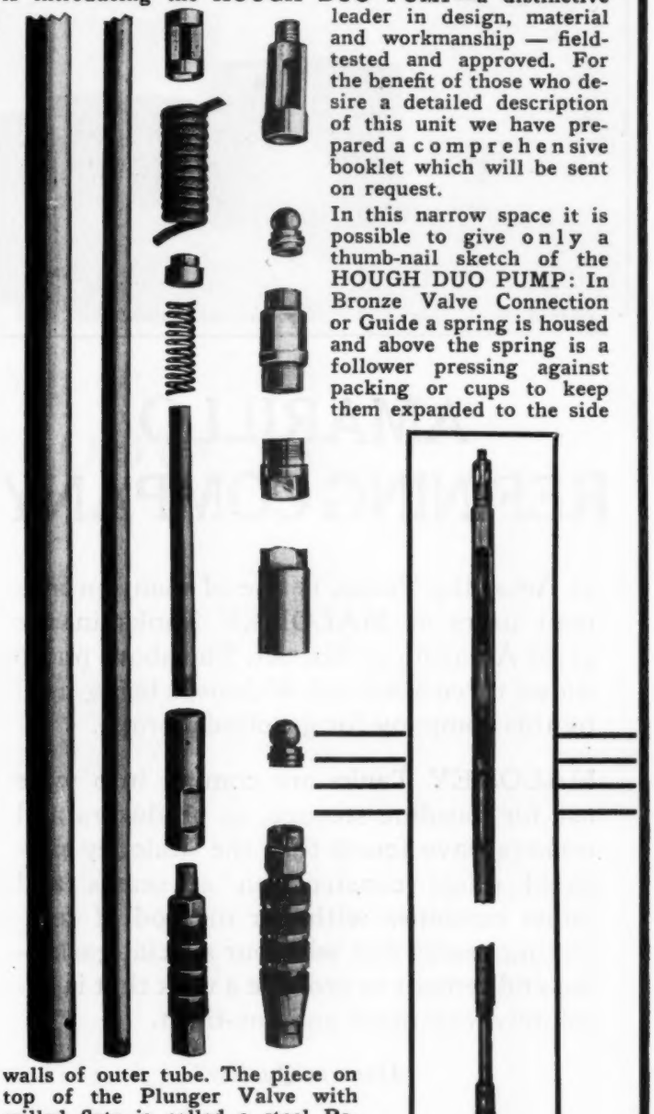
Has Six Operations

Natural Gas & Fuel Co. has six operations active in Urania. No. 1-B T. Russell, Section 26-10-1e, is drilling at 1,200 feet. Six-inch casing was cemented at 1,485 feet at No. 2 Frank Tullos, Section 26-10-1e. No. 5 Urania, Section

It's an actual fact—

Producers and pumpers who have been waiting for the ideal dual purpose pump will welcome the news that HOUGH is introducing the HOUGH DUO PUMP—a distinctive leader in design, material and workmanship — field-tested and approved. For the benefit of those who desire a detailed description of this unit we have prepared a comprehensive booklet which will be sent on request.

In this narrow space it is possible to give only a thumb-nail sketch of the HOUGH DUO PUMP: In Bronze Valve Connection or Guide a spring is housed and above the spring is a follower pressing against packing or cups to keep them expanded to the side walls of outer tube. The piece on top of the Plunger Valve with milled flats is called a steel Reversible Bottom; this unit is reversible on account of using either cups or hydraulic packing on the top section of the Valve. A radius is turned on one end of the bottom so that it shoulders against the cups and the other end of the bottom so that when the hydraulic rope packing is used the frayed ends may be placed in the cupped section. This also applies to the follower; one end of follower for packing and the other end accurately machined so that it shoulders against steel cup ring. The hydraulic packed section of the Plunger Valve can be converted into a four-cup valve by reversing the follower and bottom and with three cup rings and four valve cups; hence making the unit an 8-cup Plunger Valve. Steelex Balls and Seats throughout.



Here is the complete, assembled Duo with cut-away section showing assembly that is simple and sturdy.

Furnished with Plunger Valve 4-cup, hydraulic packing; 8-cup Plunger Valve also available but not standard. Lengths: 5 to 10 feet for 2", 2½" or 3" tubing. On sale by all good dealers.

The performance of the HOUGH DUO PUMP in wells where excessive sand is present will be a revelation—and in such wells we welcome drastic tests.

The Charles N. Hough Manufacturing Company
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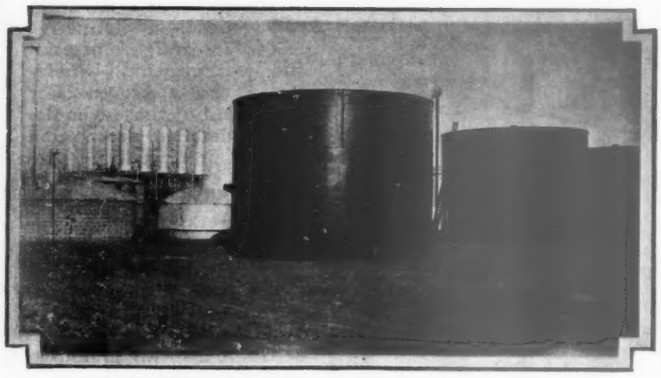
"Products that cut down your underground overhead"

KEYSTONE COPPER STEEL



AMARILLO REFINING COMPANY

at Amarillo, Texas, is one of many prominent users of MALONEY Tanks in the great Amarillo oil district. The above photo shows three 3,000-bbl. Maloneys being used by this company for gasoline storage.

MALONEY Tanks are coming into wide use for gasoline storage, as producers and refiners have found that the Maloney patented offset construction at seams and joints combines with our method of reinforcing seams and with our special gasketing and cement to produce a tank that is absolutely leak-proof and gas-tight.

"Alone in Quality"

MALONEY TANK MFG. COMPANY

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Distributors at All Principal Petroleum Points

Sizes: 12 to 3,000 Barrels

Packed in Steel-Bound Crates for Export

"Buck" Type Vacuum-Pressure Valves and Vacuum Breakers Furnished

MADE OF KEYSTONE COPPER STEEL

MALONEY PATENTED BOLTED COPPER-STEEL TANKS

MADE OF KEYSTONE COPPER STEEL

MALONEY

ALONE

26-10-1e, is being bailed to test sand at 1,484-94 feet. No. 6 H. Tullos is being rigged up, and a derrick is standing for No. 7 H. Tullos. Arrangements are being made to resume drilling at No. 1-B Urania, Section 18-10-2e, which was temporarily abandoned a few weeks ago at 1,046 feet.

Ohio Oil Co.'s No. 6 Urania, Section 18-10-2e, is drilling at 1,415 feet, and surface casing was set at 102 feet at No. 7. Roberts and associates' No. 3 Russell, Section 25-10-1e, is waiting for the 6-inch to set at 1,528 feet, and No. 4 Russell is drilling at 1,516 feet. Sherman and associates' No. 2 Russell, 2,160 feet north and 1,170 feet east, SW SE, Section 25-10-1e, is a derrick. No. 3 Russell, SE cor. NW SE, same section, also is a derrick. Standard Oil Co.'s No. 3 Urania, Section 19-20-2e, is waiting for a standard rig at 1,556 feet. Standard Oil Co.'s No. 5 Urania, Section 13-10-1e, had 1,000 feet of fluid in the hole, 700 feet of which is salt water and the test is being bailed.

Six-inch casing was cemented at 1,506 feet at Sterling Incorporated's No. 1 Wimbley, Section 18-10-2e. Six-inch casing was set at 1,520 feet at George W. Wetherbee's No. 2 Norris, Section 25-10-1e. Arrangements are being made at Wetherbee's No. 1 H. Tullos, Section 26-10-1e, to test 10 feet of sand topped at 1,542 feet. Williams Drilling Co.'s No. 3 Herbert, Section 26-10-1e, tested salt water at 1,539 feet and the hole is to be plugged back a few feet in an effort to shut out the water. Same company's No. 4 Herbert, has started drilling. A rig is up for Yeary and Bristol's No. 1 Urania, Section 8-10-2e. Youngblood and associates' No. 1 W. O. W., Section 25-10-1e, is a derrick pattern.

Bossier Parish

In the Bellevue Field, George W. Wetherbee's No. 1 Smith, Section 23-19-11, was completed at 389 feet for a 1,000,000-foot gas well. Autrey and associates' No. 2 Connell, Section 15-19-11, is drilling at 365 feet. Arkansas Fuel Oil Co.'s No. 1 Murray, Section 14-23-14, is drilling at 2,961 feet. Six-inch casing was cemented at 1,440 feet at Palmer Corp.'s No. 10 Caplis, Section 25-16-12. Woodley and Collins' No. 1 Kilburn, Section 18-19-13, is bailing to test sand with a showing of oil at 2,563-71 feet.

Caddo Parish

Gulf Refining Co.'s No. 17 Lane, Section 13-21-15, was completed in a hard broken lime formation at 3,674-76 feet, and is making 8,000,000 feet of gas and spraying 23 bbls. of high gravity oil along with 500 bbls. of salt water. Same company's No. 229 Ferry Lake, Section 15-20-16, was completed at 2,275 feet and is making 7,000,000 feet of gas. The Texas Company's No. 12-B Noel, Section 14-21-15, was completed for a 5-bbl. pumper at 1,680 feet. Mrs. N. M. Hancock's No. 2 Hampton, Section 15-21-15, was finished up at 1,747 feet and is pumping 10 bbls. daily.

Arkansas Natural Gas Co.'s No. 1 C. W. Lane, Section 13-21-15, is drilling at 3,052 feet. H. J. Bussa's No. 1 Hardeman had the sand at 1,030-53 feet and the hole filled with oil. The well is waiting for a standard rig. Dixie Oil Co.'s No. 1 Jolly, Section 27-22-15, is drilling through shale and lime at 3,965 feet, and No. 15 Muslow, Section 7-20-15, is drilling in gumbo at 950 feet. Dixie Oil Co.'s No. 71 Robertshaw, Section 14-21-15, is making hole slowly and is drilling in lime at 3,290 feet. Surface casing was set at 250 feet at its No. 74 Robertshaw, Section 14-21-15.

Gilliam Syndicate has a rig up for No. 1 Sellington, SE cor. W half SW, Section 17-21-14. Gulf Refining Co.'s No. 1 J. M. Byrd, Section 2-19-14, is boring through shale at 715 feet. Same company's No. 4-U L. B. Caddo, Section 16-20-16, is drilling in gumbo at 2,157 feet and the 10-inch was set at 150 feet at No. 5-U Caddo. Six and five-eighths-inch casing was set at 2,147 feet at Gulf Refining Co.'s No. 230 Ferry Lake, Section 16-20-16, and its deep test on the Muslow lease in Section 35-21-15, is drilling in lime and shale at 2,637 feet. Same company's No. 12 Tyson, Section 14-21-15, is grinding through hard broken lime at 2,987 feet. Magnolia Petroleum Co.'s No. 23 Raines, Section 22-21-15, is being bailed to test at 1,672 feet. Magnolia is fishing for slips at 2,451 feet at No. 1 Wiley Bradford, Section 24-21-15. Manie Drilling Co.'s No. 1 Cunningham, Section 15-17-14, is drilling at 1,900 feet. Ohio Oil Co.'s No. 1 J. S. Ardis, Section 1-21-15, has resumed drilling and is feeling its way ahead at 4,094 feet. Same company's No. 19 E. K. Smith, Section 12-21-15, is drilling at 810 feet. Oil City Oil Co. cemented the 10-inch at 105 feet at No. 2 Satterwhite, Section 10-20-16.

S. L. Ricketts' No. 12 L. B. Caddo, Section 23-22-15, is a rig. D. C. Richardson's No. 13 Youree-Randolph, Section 13-20-15, is drilling at 1,992 feet. B. L. Spell's No. 1 Thigpen-Herold, Section 10-21-16, tested dry at 1,060 feet and drilled on to 1,328 feet where the 4½-inch casing is being cemented. The Texas Company's No. 42 C. M. L. Co., Section 23-21-15, is still in a hard lime formation and is drilling at 3,325 feet. Same company's No. 47 C. M. L. Co., Section 23-21-15, is drilling at 197 feet.

The Texas Company's No. 1-B F. J. Bayou, Section 15-20-16, is drilling in a sandy formation at 4,405 feet. Its No. 61 Levee Board, Section 33-21-16, is waiting for the 6-inch casing to set at 1,803 feet. Same company's No. 11 Russell, Section 3-20-16, is drilling in sand at 2,295 feet, and the 6-inch casing was cemented at 2,355 feet at No. 57 S. P. Harrell, and No. 52 Harrell is drilling at 1,292 feet. Woodley Petroleum Co. is drilling out the cement plug at 1,845 feet at No. 1 Knight, Section 35-16-12.

Claiborne Parish

Surface casing was cemented at 300 feet at the Gilliland Oil Co.'s No. 1-D Taylor, Section 14-23-8, in the heart of the Haynesville Pool, and the test is drilling at 1,000 feet on its way to the Trinity sand. Standard Oil Co.'s No. 4 Shaw, Section 30-21-7, was deepened another foot and is waiting for a standard rig at 2,084 feet. Triangle Drilling Co. has erected a derrick for No. 1 Hollayfield, NE SE, Section 32-23-5. Its No. 1 Keen, Section 7-19-5, is drilling in broken lime and shale at 4,040 feet. Its No. 1 Cupp, Section 22-23-5, was abandoned at 2,200 feet.

DeSoto Parish

J. C. Walton's No. 1 Harp, Section 36-12-11, was abandoned after the casing had been pulled. This well came in making 6,000,000 feet of gas and a big batch of salt water from 2,784 feet. Walton staked a location for No. 2 Harp, SW SE NW, and is building a derrick for No. 1 Chaffraix, SE cor. SW, Section 36-12-11. Dixie Oil Co.'s No. 1 Jenkins, Section 9-12-11, is drilling in lime at 3,560 feet. Carl K. Dresser's No. 1 Williamson, Section 29-15-14, is drilling in gumbo at 1,250 feet. J. P. Evans' No. 1 Sutherlin, Section 20-12-14, is a derrick. The 4½-inch casing was cemented at 2,714 feet at the Magnolia Petroleum Co.'s No. 1 Bond, Section 27-12-11. Ohio Oil Co.'s No. 1 Cody, Section 34-12-16, is going through lime at 1,598 feet.

A. H. Traver has a derrick standing for No. 4 Matthews, SW cor. SE SW, Section 29-12-11. L. V. Ulrey's No. 1 Heard, Section 18-12-12, has started drilling and the 10-inch was cemented at 133 feet.

Ouachita Parish

G. E. Jordan's No. 1 Millie Roberts, Section 12-18-4e, was completed for an 8,000,000-foot gas well at 2,223 feet. Central's No. 1 Cole, Section 35-20-4e, is drilling at 975 feet after cementing the 8-inch casing at 859 feet. J. M. Huber's No. 1 Edwards, 2,640 feet south, 560 feet east, NW cor., Section 1-18-4e, is drilling at 50 feet. G. E. Gordan's No. 1 Ouachita L. & D. Co., NE cor., Section 17-18-4e, is a derrick. Eight-inch casing was cemented at 814 feet at the Palmer Corp.'s No. 2 Kate Cole, Section 26-20-4e, and same operators' No. 2 fee, Section 24-19-4e, is drilling at 810 feet. Pioneer Oil & Gas Co.'s No. 1 Nolan, Section 17-18-14e, is a derrick. United Carbon Co.'s No. 1 Wilson, Section 24-20-4e, is drilling at 1,630 feet.

Webster Parish

Arkansas Natural Gas Co.'s No. 1 Mil-

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ler, Section 30-23-9, was completed at 2,714 feet with an estimated flow of 6,000,000 feet of gas. Alabama Petroleum Co.'s No. 3-B Robbins, Section 21-21-10, is drilling at 1,800 feet. Gulf Refining Co.'s No. 2 S. P. D. Coyle, Section 21-21-10, is drilling at 1,664 feet. Louisiana Oil & Refining Co.'s No. 4 Crichton, Section 21-21-10, is drilling at 140 feet.

Magnolia Petroleum Co. has a rig up for No. 1 Turner, 950 feet north and 330 feet east of the center, Section 21-21-10. Ohio Oil Co.'s No. 37 Bodcau, Section 21-21-10, is being drilled in with standard tools. The 6-inch was cemented at 2,560 feet. A fishing job at 4,829 feet was cleaned up at the Ohio Oil Co.'s No. 1 W. Cox, Section 23-21-10, and 8-inch casing is being straightened. Same company's No. 3 Holloway, Section 23-21-10, is drilling at 250 feet. Six-inch casing is being lowered to 3,080 feet at Smitherman and McDonald's No. 1 Oakley, Section 29-33-11.

Louisiana Wildcats

Dowling and McCurry's No. 1 Swope, Section 18-19-1e, Grant Parish, topped sand at 1,615 feet and is being bailed to test. Bradley and Cozart's No. 1 Holmes, Section 16-19-1e, is a rig. In Lincoln Parish, the drilling stem stuck at 2,648 feet at The Texas Company's No. 1 Tremont. Carnahan and Kyle's Red River Parish test, No. 1 Hollingsworth, Section 24-12-11, has started drilling and the 10-inch was set at 147 feet.

Sabine Parish

In Sabine Parish, the cement plug at 3,298 feet is being drilled out at L. M. Emlet's No. 5 H. L. Bowman Co., Section 9-7-12. Emlet's No. 7 Bowman has started drilling. Emlet's No. 1 Sabine Lumber Co., SW cor. SE NE, Section 8-7-13, is a derrick pattern. Arkansas Fuel Oil Co.'s No. 1 Reeves, Section 14-20-1e, Union Parish, is drilling in red shale at 3,078 feet. Clark Creek Co.'s No. 1 Frost Johnson, Section 18-23-1e, formerly Keene and associates' No. 1, is drilling through tough gumbo at 1,200 feet. Six-inch casing was cemented at 2,070 feet at Louisiana Power Co.'s No. 1 Thompson, Section 16-20-3e. In Winn Parish, J. H. Williams abandoned the derrick pattern for No. 1 Louisiana Central Lumber Co., Section 28-10-2w. Cedar Creek Petroleum Co.'s No. 1 Sullivan, Section 6-10-2w, is drilling at 1,200 feet. Cherokee Petroleum Co.'s No. 1 Urania, Section 13-11-1e, is shut down at 1,457 feet for fuel. C. H. Wilson's No. 1 Louisiana Central Lumber Co., Section 24-13-1e, is a rig.

GULF COAST

(Continued from Page 41)

Yount-Lee Oil Co.'s No. 3 Gilbert is around 4,010 feet. The Humphrey Corp.'s No. 3 Griffith is drilling at 900 feet, with locations for Nos. 1 and 2 Griffith.

Harris County Pools

At Pierce Junction, the Rio Bravo Oil Co.'s No. 2-P Settegast was deepened to 3,960 feet and got salt water. An attempt is being made to plug it off. The Navarro Oil Co.'s No. 2 Cain is drilling at 3,255 feet. The Gulf Production Co.'s No. 11 Taylor is working over.

At Goose Creek, the Humble Oil & Refining Co.'s No. 67 Skith set and cemented casing at 2,575 feet. No. 68 Smith is at 3,655 feet. No. 9 Smith is sidetracking. No. 22 Peninsula is rigging. Gulf Production Co.'s No. 12 Galliard fee is fishing at 3,760 feet. No. 5 Hirsch is doing the same at 3,900 feet. No. 11 Chapman-Bryan is drilling at 4,600 feet. Nos. 7 Wright and 8 State land are rigging. The Powell Oil Co.'s No. 6 Bryan is fishing at 4,510 feet. The M. & B. Oil Co.'s No. 4 Scorrgea, northwest of production, is drilling around 3,300 feet.

Liberty County Pools

In the South Liberty Pool, the Associated Oil Co.'s No. 3 Condit is at 3,415 feet and the Humble Oil & Refining Co.'s No. 1-B Duessen is at 1,875 feet. The Humble Oil & Refining Co.'s No. 2 Welder in the west side extension is shut down on account of high water.

At Hull the Republic Production Co.'s No. 120 Dolbear is drilling at 2,450 feet; No. 123 at 2,150 feet, and No. 124 at 1,000 feet. Humble Oil & Refining Co.'s No. 21 Guedry is drilling at 2,910 feet; No. 5 Merchant is a location; No. 3 Sterling is drilling at 4,045 feet; No. 4 Abel "B" is drilling at 1,350 feet. The Texas Company's No. 1 Hannah is drilling at 3,355 feet; No. 10 Merchant is drilling at 3,675 feet. Empire Gas & Fuel Co.'s No. 19 Barngrover, is a location. Gulf Production Co.'s No. 22 Morris-Phillips and No. 17 J. C. Baldwin fee are rigging up; No. 65 Phoenix is drilling at 3,510 feet; No. 66 at 3,740 feet; No. 67 is rigging up as is No. 17 Scarborough; No. 3 Thomas fee and No. 27 Phoenix are rigging up to deepen.

Orange Pool

In the Orange Pool the Brownie-Babbittee Oil Co.'s No. 5 McLean is drilling at 4,020 feet. Rex Petroleum Co.'s No. 4 Carbello is drilling at 4,245 feet. Humble Oil & Refining Co.'s No. 25 Chesson "A" is drilling at 5,150 feet. The Kishi Development Co.'s No. 7 McGuire set whipstock at 4,375 feet. Orange Petroleum Co.'s No. 1 Williams is cutting liner at 4,225 feet; No. 1 Mitchell-Berwick is rigging up. The Rycade Oil Corp.'s No. State "B" is drilling at 4,826 feet; No. 5 is drilling at 1,200 feet. Sun Oil Co.'s No. 1 Belile is drilling at 2,225 feet. Supreme Oil Co.'s No. 4 Jackson is drilling at 3,825 feet. Atlantic Oil Producing Co.'s No. 4 Hager is drilling at 4,025 feet. Texhoma Oil Co.'s No. 4 Chesson is drilling at 4,772 feet; No. 7 is cutting liner at 3,050 feet. Gulf Production Co.'s No. 9 Kishi-Lang "B" is drilling at 2,875 feet; No. 21 Lee Hager fee is drilling at 4,800 feet. No. 22 at 4,450 feet; No. 23 is a location; No. 3 at 4,940 feet and No. 9 Peveto is rigging up to deepen.

Other Pools

At High Island, Galveston County, the Gulf Production Co.'s No. 5 G. E. Smith is drilling around 3,055 feet. Sun Oil Co.'s No. 8-C Cade is around 2,765 feet and No. 10 Cade is at 2,345 feet with No. 8 Lockhart around 845 feet.

At West Columbia, The Texas Company's No. 22 Arnold is deepening at 3,655 feet. Humble Oil & Refining Co.'s No. 1 LeReubus is deepening at 4,175 feet.

The Rycade Petroleum Corp.'s No. 1 Kountz at Markham is drilling around 3,123 feet.

In the Edgerly (La.) Pool the Green Oil Co.'s No. 7 Moore is at 2,135 feet. The Rex Petroleum Co. is cleaning out No. 2 Hunter to work it over. The Gulf Refining Co.'s No. 31 Bright-Penn is rigging to work over.

Coastal Wildcats

Heavy rains during the week interfered with operations outside of the defined pools. Many of the drilling wildcat tests have been forced to shut down on account of the difficulty of getting in fuel oil and material to the locations.

In Brazoria County, the Roxana Petroleum Corp.'s No. 2 Allen is around 3,500 feet and No. 1 Clements is around 4,520 feet.

In Hardin County, the Humble Oil & Refining Co.'s No. 2 Weiss, north of Strain is at 345 feet. The Texas Little Farms Association's No. 1 Hawley is idle at 2,950 feet. Sun Oil Co. has a derrick up for No. 1 Carpenter, 2,000 feet west of production at Sour Lake.

In Jefferson County, the Houston Oil Co. is deepening No. 1 Davis at 2,200 feet at Big Hill Dome. Gulf Production Co.'s No. 1 Burrell, Fannette Dome, is around 4,155 feet and No. 2 Bordages is below 2,415 feet.

In Matagorda County, Gulf Production Co.'s No. 4 Craig is around 1,875 feet. No. 1 Sanford is rigging.

At Long Point in Fort Bend County, Gulf Production Co.'s No. 8 Davis is at 3,575 feet and No. 10 Davis is below 775 feet.

In Wharton County, Houston-Gulf Gas Co.'s No. 1 Woodbine, about 5 miles north of production at Boling, is drilling around 755 feet. Sorelle's No. 1 at Glen Flora is around 600 feet. J. W. Rich's No. 2 Dennis, 12 miles west of Boling, is drilling around 735 feet.

The Humble Oil & Refining Co. has started geophysical and formation tests on a tract of 93,000 acres of the Delta Lumber Co. in the north end of Walker County.

In Refugio County, the Houston-Gulf Gas Co. is drilling Nos. 1 and 2 Heard in the gas section and T. W. Gregory, receiver, has started No. 1 Rooke. The Houston Oil Co.'s No. 1 O'Connor ranch, near Mission Bay, is shut down.

In Calcasieu Parish (La.) the Standard Oil Co. of Louisiana is drilling No. 2 Industrial Lumber Co. lands on the new dome south of Stark and north of the Vinton Pool. The Pure Oil Co. is rigging No. 3 Sweet Lake.

The Union Sulphur Co. is drilling No. 1 Bounville, St. Mary Parish. The Rio Bravo Oil Co.'s No. 1 Glenwild is sidetracking at 3,025 feet.

The Texas Company is rigging No. 1 Guilloy, Evangeline Parish.

SOUTHWEST TEXAS

(Continued from Page 54)

brock and J. M. Davis has machinery on the ground and is rigging up for his No. 1 Schultze. South of Kingsbury, The Texas Company started up and set surface casing and are down several hundred feet in the wildcat test on the Glenwinkle.

Karnes County

Earl B. Reynolds has pulled casing and abandoned his No. 1 Butler, in Karnes County west of Runge, and is moving on a new location about 1,000 feet south of the first and a little to the west.

Kleberg County

Humble Oil & Refining Co., developing a field in Kleberg County 8 miles southeast of Kingsville, which it discovered last year, has secured a permit to drill No. 3 Cross State, 400 feet north of No. 2 Cross State, the discovery well. It is bringing in No. 2 R. G. Flaton at 2,800 feet. The discovery well is making about 100 bbls. of oil per day.

La Salle County

DeLange, Eiser Development Co.'s No. 1 fee on the Dobie ranch in LaSalle County, which spudded in recently, has had difficulty with small boulders and is sending out a basket for picking them out of the well. Depth is 100 feet.

Maverick County

Rycade Oil Corp.'s No. 1 Chittim in Maverick County, 18 miles east of Eagle Pass, is drilling at 3,680 feet. No. 2 Cox, 12 miles east of Eagle Pass, has been abandoned at 1,000 feet. Its D. Sullivan is rigging up on a new location, having abandoned the first due to crooked hole at 1,800 feet. L. F. McCraley and associates have blocked 7,000 acres in Maverick County, 5 miles south of Eagle Pass and across the river from a shallow well in Mexico, that is pumping a little oil at 445 feet. They plan a test.

Medina County

Grayburg Oil Co.'s wildcat test on the P. S. Ward farm in Medina County topped the Edwards lime at 2,110 feet, the location being about 12 miles south of Hondo, and is drilling at 2,118 feet. Top of the Edwards is dry. This week will see the final results on the well so far as the Edwards is concerned. Plateau Oil Co.'s wildcat on the Harrison farm on Survey 72½, several miles west of Grayburg, is drilling at about 850 feet and has had a showing of oil at about 240 feet and a showing of gas at 590 feet, indicating structural conditions that make the well look fairly good so far as it has gone. Ina Oil Co. has spudded in its wildcat on the Charles Finger land on Survey 746 and is preparing to start an Edwards lime test on the August Mumme land on Survey 113, in the northwest corner, the location being about midway between the Ina and the Hondo Fields. Henderson & Holden, who have completed a gasser at 903 feet on the Adams farm, a mile south of the Ina Field, that gauged over 9,000,000 feet have made a location 1,600 feet east of No. 1 and are spudding in on No. 2. This is a new gas area discovered by No. 1 and with no pipe line near. Gas will be used for drilling a deep test which No. 1 was planned to be. Knox and others abandoned the location on the Howard farm on Survey 91, a mile or more east of the Henderson & Holden well, and the lease has been cancelled and Eastham & Tarver have secured the lease and are rigging up.

Alamo Drilling & Leasing Co. has spudded in on No. 1 Bendele, an Edwards lime test a little west of Noonan in wildcat territory, but near three shallow wells that make a little oil, and Hudson & Johnson in No. 2 Christilles, one of the shallow wells, are drilling at 1,700 feet deepening it to the Edwards lime. Alamo Drilling & Leasing Co. is rigging up on No. 1 Louis Graff, 2 miles north of the Ina Field, and Eastham & Tarver are shut down for repairs at 120 feet on the Muzzman, 1 mile north of the Ina Field. California-Medina No. 1 Rothe, in western Medina, is drilling at 3,140 feet in Pennsylvanian, and Cecil Switzer in No. 1 Zerr, northwest of Hondo, is drilling at about 1,600 feet. Gibson Oil Corp. is drilling at 200 feet in No. 1 Faesler on Survey 808, southwest of the Ina Field. In the Ina Field Arnett Oil Co. has completed a small well in the No. 3 Nixon, one-half mile southwest of the Ina discovery well. Golden West Oil Co., after a shutdown for a couple of weeks in No. 5 Schmidt while cleaning out the other four wells, is drilling at 400 feet. L. Smith, 2 miles west of the discovery well, is drilling a little below 200 feet in No. 1 Nixon on the J. C. Jay survey No. 531. This test was previously carried as No. 1 Jay.

In the Hondo Field, Medina Oil Co.'s No. 1 Taylor, the 356-foot discovery well, is on the pump and making an unusual amount of oil compared with its depth. Nos. 2 and 3 Taylor are producing a few barrels each at 315 feet and 262 feet respectively; and No. 4 Taylor, located 300 feet south of No. 1, has spudded in and is drilling at 50 feet. Medina Oil Co. has made a location on the August Mumme land, a mile or so west of its four shallow wells. Al Buchanan's No. 1 Odem, in the shallow area, is drilling at 264 feet and had an oil showing at 260 feet. Golden West Co.'s No. 2 Odem, in the same district, a little southeast of the discovery well, is drilling at 360 feet and underreaming to set 6⅝-inch casing to shut off water. The log ran accurate with the discovery well till within the last few feet. K. Reager and others' No. 1 Langfled, a little south of this group of shallow wells, is drilling at 825 feet, and the same interests' No. 1 Schrieber is rigging up with a machine. W. C. Jameson's No. 1 Mott, in the same district, at 480 feet is underreaming the 6⅝-inch casing to shut off water. Kittle & Townley's No. 2 Richter, a mile west, is drilling at 325 feet and their No. 1 Bendel, on Survey 593, is a location for an Edwards lime test. Jacobs & Powell's No. 1 Haeglin is drilling at 410 feet. Doctor Schlottman and others' No. 1 Richter, on Survey 134, is setting 8-inch casing at about 200 feet. Yantis and others' No. 1 Haeglin is drilling at 140 feet. Thus far none of the several tests in the vicinity of No. 1 Taylor, which got big production at 356 feet, have been able to duplicate the discovery well and the only producers completed thus far are two additional wells, Nos. 2 and 3 Taylor, by the Medina Oil Co. A number of deep tests are starting or being worked up around the shallow field which up to this time is its greatest importance.

Milam County

Alexander & Lyle have spudded in their deep test in Milam County, north of the town of Rockdale 3 miles and near the Lee's No. 1 Leonard Isaacs test, drilled last year a little to the north, and which stopped at 3,425 feet where it twisted off the bit and failed to recover it. The Texas Company was interested in the test. It was in the top of the Edwards lime when abandoned, but not deep enough to make an effectual test of the Edwards.

McMullen County

Eugene Sights has sold to T. H. Poole and associates his test on the Franklin ranch in McMullen, north of Tilden, the county seat, which was standing at 1,620 feet waiting for casing. Poole and associates have resumed work on the well and have built a derrick and are moving in a rig on the Dillworth land, about 3,000

feet to the east for a second test on the block.

San Patricio County

John Sigmund's No. 7 McCampbell at Aransas Pass is drilling at 3,100 feet, and Moody-Seagraves at White Point are drilling at 2,400 feet.

Star County

Dauchy & Bryant are drilling at 1,900 feet in No. 1 Kelsey on Survey 125 in Starr County, and O. W. Killam is standing at 328 feet on No. 1 Guerra on Survey 43.

Zavala County

Continental Oil Co.'s No. 1 Pryor, in Zavala County, at 3,140 feet is in the base of the Edwards. It topped the Georgetown at 2,773 feet. The well is looking fairly good since comparison of the log with that of No. 1 Pryor of the Old Dominion, which at 3,635 feet, a couple of miles south, is in the Del Rio and standing. The Continental well got a little sulphur water in the Edwards, but not enough to flow. Location was made primarily with the idea of production in formations below the Edwards. D. H. Byrd-Old Dominion is drilling at 2,350 feet.

Webb County

The most active area in the Mirando Field is the territory between the Edgington Pool and the original Mirando Valley Pool on the south and most of the drilling outside of purely wildcat drilling is in this semi-proven territory which is gradually extending south from the Edgington across the Bruni tract to the Mirando Valley Pool. Rydal Oil Co. and Crown Central Oil Co. completed No. 7 Bruni, in the northeast corner of Block 17 of the Bruni tract, and it came in swabbing 700 to 800 bbls. per day from a depth of 1,711 feet. It offsets on the west the Aviator Star well in the northwest corner of Block 18, in which a half interest in the well and 80 acres was sold to Simms for $20,000. It is a south offset to the Crown Central Oil Co. well in the southeast corner of Block 14. In the southwest corner of Block 13, the fourth corner, a test is being started by the Gibson Oil Corp. and this group of four wells extends the Edgington Pool about a half mile to the south.

Crown Central Oil Co. has also brought in a well in the southeast corner of the west half of Block 16, which is a north offset to the Ball well brought in a few weeks ago, which is about a mile southwest of the Aviator Star well. In this district, Ball's well was the first and it came in good for about 75 bbls. of oil a day, pumping 150 at first. Sun Oil Co. offset it to the east and got a well making 50 bbls. of oil and a little salt water. Sun Oil Co.'s offset its own well on the south and got salt water. Operators believe the casing was not properly set. Crown Central Oil Co. has offset both the Ball well and the Sun Oil Co.'s well, to the north with good producers. There is a line of gas wells extending all along to the west as far south as the original Mirando Field and the frequent discovery of oil producers to the east of gas areas in the Laredo country is going to result in considerable drilling in this 5-mile stretch between the Aviators and the Mirando Valley Pools. O. W. Killam is drilling at 800 feet in the No. 1 Bruni on Block 7 of Survey 835, a little to the west of Crown Central Oil Co.'s block, the location being 20 feet from the south line and 150 feet from the east line of Block 7, Survey 835. Simms Oil Co. is preparing to drill on the acreage just south of that bought from Kirkpatrick-Lucas with two gas wells completed. South of that, in Block 1 of Section 9, close to the Zapata County line, Gleason is preparing to drill, and in Block 12 of Section 11, and in Zapata County, a mile south, he has a well testing at 1,571 feet. In Block 7 of Section 125, P. N. McCullough is in a sand at 1,700 feet. It is on the Webb County side of the line. Cullinan & Clark in Block 9, Section 10 in Zapata County, are preparing to drill. All of these last named tests are south in a line with the Mirando Valley Field. Somewhat to the east of these, Hill & Perkins are coring a sand at 1,725 feet in Survey 258, just north of the Webb-Zapata County line.

In the Bruni tracts, considerably to the east, Thomas Binney is coring at 2,410 feet in Block 60, about 3 miles east of production. A map of the entire Mirando district in The Oil and Gas Journal of April 15, on page 61, will give the reader a better understanding of the field.

Carolina-Texas District

In the Carolina-Texas district in Webb County, the Associated's test on the Webster is drilling out liner at 2,135 feet. Moody-Seagraves are testing in Block 61 of Section 261, at 2,609 feet. Morgan Oil Corp. is drilling at 2,250 feet in Block 6 of Section 335. United States Gas & Oil is standing at 2,100 feet while drilling a water well. This test cored a showing of oil and with an inadequate supply of water, shut down until water could be secured before drilling in and testing. It is on Block 679 and is 160 feet from the north and west lines and a mile east of the nearest gasser. J. H. Winch is starting up on Block 12 of Section 336, just 800 feet north of the south line and 150 feet east of the west line.

Webb County Wildcats

Layne-Texas townsite well in Laredo, has resumed and is underreaming to set 10-inch at 1,723 feet. Ritchison is resuming in Section 71, Block 1, at 1,600 feet, the test being 12 miles northeast of the Carolina-Texas Gas Field. Henne & Winch have abandoned their test on Survey 43, about 5 miles northeast of the Carolina-Texas Field, at a depth of 2,818 feet.

Jim Hogg County

In the Randado Pool in Jim Hogg County, three tests are drilling. Houston Gulf Gas Co. is starting its No. 8 Palacious on Block 20 of Survey 291, and its No. 9 on Block 11 of Survey 291. The first is an offset to its No. 7, which last week came in flowing about 750 bbls. a day at a depth of 1,250 feet. The other is south of the Simms Oil Co.'s gasser completed last year. Pippin is rigging up a quarter of a mile east of the discovery well on Survey 291, and the Magnolia Petroleum Co. is preparing to start its second test on Block 10 of Survey 291. The Simms Oil Co. and E. L. Smith's test on Survey 233, a couple of miles to the south has been abandoned at 3,029 feet.

Henne, Winch & Fariss Pool

In the Henne, Winch & Fariss Pool, the Magnolia Petroleum Co. has made new locations for tests in its blocks in Survey 276, in the proven district for Nos. 8, 9 and 10 Martinez, and has secured a permit for 12 and has started to test No. 13 at a depth of 1,976 feet. The test has been showing gas.

In the territory to the north of the Henne, Winch and Fariss Field, interest centers in the K. & S. Corp.'s No. 28, on Block 6 of Section 11, of the Holbien ranch, which was on the sand when the company brought in its No. 27 Holbien and No. 1 Webers last week, making oil in a new territory. No. 29 was completed the same week as a gasser. No. 28 was to be brought in Saturday and was expected to be a gasser also. New locations will be made and the four rigs will be moved to new territory. O. W. Killam, on Block 5 of Section 255, is drilling No. 1 Hinnant, and is down 1,900 feet and nearly ready to test. The well is a little to the west of the seven gas wells of the K. & S. Corp., and is drilled with the idea of a possible chance for oil on the west side of the gas area as well as on the east. Killam's No. 1 Holbien, on Block 1, Section 2, in the extreme northeast corner of the Holbien ranch, was abandoned last week. It tested salt water.

Among the Jim Hogg County wildcats, Pittsburgh Oil & Development Co. (Benedum & Trees), is drilling below 2,000 feet in its No. 1 Allen, and has started drilling in No. 2 Allen on Block 22, Survey 41, of the same ranch, and the National Oil Co. is drilling at about 1,400 feet in its No. 1 Wilbur Allen, on Block 3 of Section 23, of the Allen ranch. E. J. Braswell, on the White subdivision of the Vela ranch, is endeavoring to com-

(Continued on Page 136)

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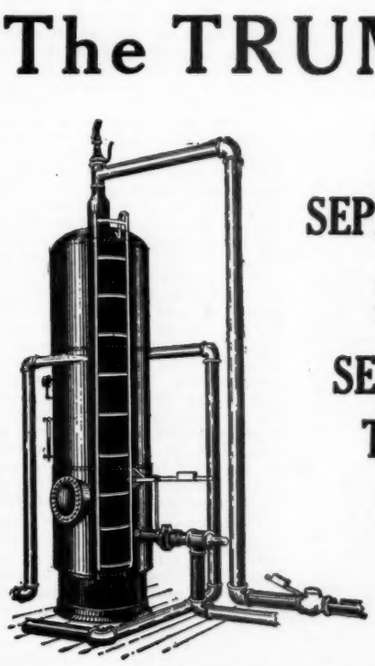

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Generation of Steam at Refineries

Efficient Operation is Dependent On Proper Equilibrium Between Flow of Water and Air and Fuel Consumption

By H. A. Ross*

Think, if you will, of a 100-horsepower boiler. We shall not concern ourselves with its dimensions. Its capacity for production is 100 horsepower per hour. Naturally, this unit may be operated at a reasonable percentage of overload, but its 100 per cent capacity is 100 horsepower. Now, a boiler horsepower, as we use it today, is the evaporation of 30 pounds of water into steam. (Just a word here to any of my technical brethren who may be present. We are waiving the nomenclature of the profession, in order to simplify our illustrations as much as possible. We will now proceed without further apology).

I stated that 30 pounds of water evaporated into steam was the equivalent of a boiler horsepower. Therefore, a 100-horsepower boiler will produce 100 times 30, or 3,000 pounds of steam per hour. To produce this 3,000 pounds of steam per hour, we, of course, understand that we must burn fuel. Continuing our illustration a bit farther, I want to assume that our 100-horsepower boiler is cold. There is no fire under it, but it is filled with water to the poper level, and the grate is covered with tinder to start the fire. We strike a match and as quick as we do so it ignites. Right here the natural law of combustion begins. One molecule of carbon contained in the wood of the match combines with two molecules of the oxygen in the air, to form a chemical compound called CO_2. From this combustion heat is evolved. The more rapidly this CO_2 combination takes place, the greater will be the heat evolved per interval of time. Of course, there is only so much carbon in the match, therefore the total available heat in it is of a definite quantity. You can readily understand that if, under ordinary conditions, it required a minute to evolve this total quantity of heat from the match, but if by some outside means we would complete this combustion in one-half the time, double the quantity of heat per unit of time would be evolved.

We apply our match to the tinder under the boiler and it begins to burn, a greater volume of heat ensues as it becomes ignited. Presently we begin to apply or lay on our coal. All this time, the cold water in the boiler has been absorbing, through the medium of the boiler shell, a certain proportion of the heat we have been generating in our fire by the combination of the carbon in the coal and the oxygen in the air, which we are admitting through the fuel bed. As the temperature under the boiler increases, the temperature of the water increases, until it reaches a point where its equilibrium becomes unbalanced, then a change in its characteristics occurs and it assumes a different form—that we call steam.

PVT Formula

The continued rise in temperature of the water causes a corresponding increase in the steam temperature. As the temperature of the steam rises, increase in its volume occurs, and as this increase in volume has no place to spend itself (because our boiler for the time being is a closed vessel) only one thing can now happen. A pressure begins to build up and here is where our PVT (pressure, volume, temperature) formula originates. You have doubtless run across this a lot of times in your business of oil refining.

In due time, as our fire increases, its volume of heat increases and as combustion progresses, we find a pressure of steam suitable for our purpose has been generated, and we are ready to open the valves and permit the steam to flow to points where we wish to use it. Now remember, that this boiler is to produce 3,000 pounds of steam per hour. This would be at the rate of 50 pounds per minute. A number of our textbooks tell us that 5 pounds of bituminous coal will produce 1 boiler horsepower (personally I believe this to be a very low evaporative rate, but it will serve our purpose of illustration). I stated that 30 pounds of steam equaled 1 boiler horsepower, and our rate of steam flow from our boiler being 50 pounds per minute, 50 divided by 30 (or 1 horsepower), means that our flow rate per minute then equals 1⅔ boiler horsepower per minute, and 5 pounds of coal being necessary to produce 1 horsepower, it will require the consumption of 5 times 1⅔, or about 8½ pounds of coal per minute to produce our flow rate of 50 pounds of steam per minute. This we would term an evaporation of about 6 pounds of water per pound of fuel. Two other facts now appear in our problem. There must be a flow of water to the boiler equivalent in weight to the 50 pounds of steam flowing from it. There must also be a weight of air somewhat in excess of that actually needed flowing to our boiler, to continue and support the combustion of our coal.

The composition of this air is approximately 79 per cent by volume of nitrogen and 21 per cent by volume of oxygen. This is not altogether true, because our atmosphere also contains some of the rarer gases, such as argon, helium, etc., but these gases are of so slight a volume as to have but little effect on the main bulk of our air for combustion purposes. Only the oxygen in the air is of any value to us for the purpose of combustion, so you see that for every pound of oxygen we need, we must also take with it about 3.32 pounds of nitrogen, because the proportion of nitrogen and oxygen by weight is 76.85 and 23.15 per cent, respectively. Without pestering you with a lot of chemical formula in this connection, I will simply state that theoretically for every pound of carbon we burn, 11.52 pounds of air will be required (you may check this from your textbook if you wish). Now then, to properly burn this 8½ pounds of coal per minute in our model boiler, which I have constructed for you, we shall need at least 95 pounds of air to flow into our boiler per minute.

Operation of Ideal Boiler

We have now evolved an ideal boiler that will produce 50 pounds of steam per minute. To accomplish this, as before stated, requires an equivalent flow of water, a definite consumption of fuel and a proper flow of air. Each is a function of the other. Change the rate of flow of our coal, air or water, and you immediately affect the flow of your steam.

Let us take the water flow first. Suppose we increase the rate of water flow from 50 to 100 pounds per minute. What happens? Immediately the boiler must divert some of the work it was doing in sending steam into the lines, to heat the added volume of water to a proper steaming temperature. Our steam flow is affected thereby in a direct ratio.

Suppose we increase the firing rate and stoke double the amount of coal per minute. Right here is where we uncover our first big loss. Our first conclusion would be that we would double the rate of our steam flow, but we don't.

The most effective part of a boiler is that upon which the radiance of the fire directly shines. You have often stood in the direct rays of the sun and noticed the effect of the heat on your body. Have you also noted the feeling of chill should a cloud or some other object suddenly intervene and cast a shadow on you? This same thing occurs in your boiler from your excessive coal. You have interposed a shadow between your fire and your boiler. Remember, I said that it was necessary to supply about 95 pounds of air to support the combustion of the 8½ pounds of coal. Now our air flow has been restricted by the large amount of coal we have just fired, and, therefore, we cannot introduce a necessary amount of air to support the combustion of the coal as the gases are distilled off in so short a space of time. What is the result? Oxygen combines with carbon in two different ways; first one molecule of carbon combines with a molecule of oxygen to form CO or carbon monoxide. This is a gas similar to our illuminating gas, and in this combination about 4380 B.t.u. per pound of carbon are generated. Now this CO, or carbon monoxide, before it can combine with another molecule of oxygen to form CO_2, must be ignited, and the temperature at which it ignited is not less than 1210 degrees Fahrenheit. When it does ignite and combines with this other molecule of oxygen to form the CO_2, 14,540 B.t.u. per pound of carbon have been evolved.

Method of Firing

You can understand then that first we threw the shadow on the hot boiler. Then we lowered our furnace temperature so that proper ignition could not occur, and, in consequence, instead of combining our carbon and oxygen to evolve the 14,540 B.t.u., we have combined them in such a way as to only derive 4,380 B.t.u., because we could not inject sufficient air. Therefore, a net loss of over 10,000 B.t.u. occurs for every pound of fuel burned in this manner. You see from this then that our 50 pounds steam flow rate is again affected, and we have wasted a lot of fuel in addition.

We can also understand from this how very important it is that coal can be applied to this boiler as near as possible at a rate constant with the flow of steam. When this large amount of coal was fired, we probably did not get it spread evenly, and because of a long firing interval, a large hole has burned through the fire and is admitting a lot of free air into our furnace.

Here is a paradox—we are admitting too much air into our furnace, and yet there is not enough to support combustion properly. Why? This air is entering the furnace in extremely large volume through the burned out portion of the fire or the thin spot. By-passing or short circuit of the active fuel bed now occurs. Following the line of least resistance, the air rushes up into the furnace without combining with the carbon, through the boiler, and up the stack. In its course, it dilutes the hot gases we have already produced and in its passage through the boiler actually absorbs heat from it until its temperature is raised to at least that of the hot surfaces over which it has passed. Instead of being forced through the fuel as it properly should, we have permitted its unrestricted entrance and we have, therefore, derived a further loss as a result. Smoking stacks most certainly indicate an unnecessary waste of fuel, but did it ever occur to you that a clear stack might indicate much heavier loss from this excess air condition?

The conditions of our model boiler and the manner in which I have stated it should operate are, I know, impractical from a daily operating standpoint, but the closer we endeavor to maintain a regularity of operation of input to output, the greater will be the economy, not only from a fuel standpoint, but also from the fact that our distillation processes are, to a great extent, dependent upon steam pressures or flow to our stills. If the steam valves to our stills have been set by the stillman for a certain pressure, and this pressure continually varies first up and then down, irregularity of still operation naturally follows. Then we wonder why yields, colors, flash, viscosities, etc., have gone to the bad.

Suppose we are steaming filters, our valves are set accordingly. Saturated

(Continued on Page 143)

EFFICIENCY IN BOILER OPERATION

The first part of Mr. Ross' paper was devoted to pointing out some of the bad practices commonly found in boiler plant operation. He said that at many plants the equipment was antiquated and at other plants the equipment had been improperly installed. He also stressed the necessity of educating the employes reparding their work in order to secure their cooperation in all details of operation.

In concluding his paper Mr. Ross emphasized the following three factors in efficient boiler plant operation:

First, by systems of daily records. These records must contain such detail of operation and production that a definite cost per unit of steam may be had. These records must be recapped to monthly sheets of similar character for comparative purposes.

Second, you can never hope to control your waste of fuel by employment of any Tom, Dick or Harry, just because he can handle a shovel. I believe that we must educate our fireman to obtain economy in the following manner. Schools of instruction should be established along practical lines. Your men should be compelled to attend such a school as a part of their routine duties, and should be paid their regular wage while so engaged. After they have passed a proper test, they should be made to further demonstrate their proficiency by actual performance in your boiler room. Increase in their wages to be proportionate to their proficiency. If the man can't make the grade—kick him out and forget it. I'll wager that if such a plan as this was adopted by the members of this association, at least 50 per cent of your firemen would resign in mighty short order, and that is just what we desire—automatically and without further effort on your part, you at once begin an economic house-cleaning.

Third, don't expect your superintendents to work an economic miracle in your boiler rooms. They've got their hands full, believe me, in producing your goods. Don't expect these men to be able to duplicate the accomplishments of the science of engineering. If you can save five, ten, fifteen, twenty or twenty-five thousand dollars a year, don't you think such a saving would warrant the expenditure of a few hundreds of dollars a year? Invest a thousand dollars and earn ten thousand on it. I challenge you to beat it.

*National Petroleum Association, Cambridge Springs, April 14 and 15.

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SOUTHWEST TEXAS

(Continued from Page 133)

plete a gas well before April 19, when the lease expires and to meet contract requirements. Simms Oil Co., on the Oscar Thompson ranch, is drilling below 3,055 feet no Block 52, the test being known as the No. 1 Jones. L. M. Holden has recemented at 2,855 feet in No. 1 Jones, east of Hebronville, and is waiting for new cable to bail and test. It is a cable tool job.

Jim Wells County

Pittsburgh Oil & Development Co. has set surface casing in the No. 1 Gallagher south of Sandia.

Duval County

Pittsburgh Oil & Development Co. made a location on the Peters ranch, 12 miles north of the Cole Gas Field, and is preparing to move in. Murchison & Fain of Wichita Falls and San Antonio have made a location on the same ranch and are moving in, and M. Z. Dibble of San Antonio is preparing to drill on the ranch, making three new wildcat tests on the ranch.

Humble Oil & Refining Co.'s No. 4 Schallert on the Palangano salt dome, is drilling at 3,163 feet, and Simms Oil Co.'s No. 1 Schallert, on the north or opposite side of the dome, is drilling at 610 feet. Maurer & Dugganon are drilling at 1,570 feet on the Willie Hoffman ranch in Survey 123. T. J. Graham, on the Beall ranch, is drilling at 1,610 feet. Benedum & Trees are rigging up on the Southerland ranch, Section 159, which is 12 miles north of Benavides. Humble Oil & Refining Co. is rigging up on the new location in the northern part of Duval County, the location being on the Dowdy land, owned in fee by Humble Oil & Refining Co., in Survey 272, and 425 feet from the north and west lines. In addition to its test on the Peters ranch, the Pittsburgh Oil & Development Co. is rigging up on the Southerland ranch, 12 miles north of Benavides, on Section 159.

Latest reports of depths on the Piedras Pintas salt dome were Humble Oil & Refining Co.'s No. 5 Walsh, 3,875 feet in dark soft sandy shale which looks like it was on top of heaving sand and close to salt water. Moody-Seagraves and Morgan, who first announced to drill deeper No. 1 Walsh, are standing and waiting developments in other tests. Magnolia Petroleum Co. is shut down on account of boiler trouble at 2,992 feet in No. 1 Speer. Hughes shut down at 3,656 feet in No. 1 Peters, and Grayburg is drilling at 3,838 feet in No. 1 Halff.

Simms Oil Co.'s No. 1 Bennett, six miles northeast of the Cole Field is drilling at close to 2,600 feet.

CANADIAN FIELDS

(Continued from Page 52)

feet and drilling. McLeod Oil Co.'s No. 2, LSD 16, Section 1-20-3w5, a half mile south of Royalite's No. 4, is down 3,385 feet and after some delay repairing the drilling stem has resumed drilling. New York-Alberta Oil Co. is arranging to locate a test in the Turner Valley Field. Great Northern Mutual Oil Co., headed by Hugh M. Jones and incorporated in Montana, has secured acreage in the Turner Valley Field, and is locating a test. Richard Loy will have charge of the drilling as geologist and field manager.

In the Red Deer valley, a syndicate of Drumheller, Alta. Men are locating a test for oil.

In the Ontario fields, Fred Deacon has purchased the McColl property on Eureka street, in the Petrolia Field, and will overhaul the equipment and operate the property. The property, which contains a large number of shallow pumpers, was damaged by fire last spring. Mr. Deacon has been in charge of the Telsey oil property near Petrolia.

Dolomite Oils, Ltd., has made a tentative location in the Turner Valley Field between No. 2 McLeod on LSD 16, Section 1-20-3w5, and Illinois-Alberta's No. 1 on LSD 14, Section 12-20-3w5. Western Ridge Oil Co. is moving derrick timbers for a test on LSD 1, Section 11-20-3w5.

Other Operations

Advance Oil Co.'s No. 1, LSD 14, Section 20-19-2w5, which is down 3,160 feet, has pulled the 6-inch casing and lifted the 8-inch and is underreaming to carry the 8-inch to the bottom of the hole. Advance's No. 2, on the same section, spudded in a short time ago, will resume drilling, and the two wells will be drilled simultaneously. Mill City Oil Co. is bringing in derrick timbers for a test in the northern end of the Turner Valley Field. Great West Oil Co.., SE, Section 7-20-2w5, has shut off the water flow which hindered the start of the drilling and is down about 100 feet with the 23-inch hole. New York-Alberta Oil Co. is bringing in an outfit for a test on LSD 6, Section 20-19-2w5. New Black Diamond Oil Co., LSD 1, Section 3-20-3w5, which has an unfinished test of the old Black Diamond Oil Co. down 1,280 feet on its leases, has decided to drill an entirely new hole instead of deepening the unfinished test. Mammoth Oils, Ltd. has a location on LSD 2, Section 24-20-3w5. New Valley Oil Co., which previously made a tentative location on Section 6-21-2w5, may move to Section 32-30-2w5 for its test. The company has derrick timbers at Okotoks and drilling equipment, rig irons and casing are en route. The officers are: W. E. McLeod, president; H. P. McLeod, vice president; H. A. Hortsman, secretary-treasurer; E. H. McLeod, managing director. New McDougall-Segur Oil Co. has located a test in NE, Section 12-20-3w5, just south of the Illinois-Alberta Oil & Refining Co.'s No. 1. A Calgary syndicate is arranging to put down a test on the holdings of the McDougall-Segur Exploration Co., in Section 12-20-3w5. Scotia Oils, Ltd. have made a tentative location on Section 5-20-2w5, within a mile of Royalite's No. 4, and half a mile from Royalite's Nos. 1 and 2.

On the Mill City leases, the Belgo-Canadian Co. is arranging to deepen the old Record Oil Co.'s well, Section 4-19-2w5. This test is down 4,327 feet and has one or more strings of tools at the bottom of the hole, so that the drillers have a difficult fishing job confronting them before they can make any new hole. When the hole is cleared either a rotary or diamond drill outfit may be used for the deeper drilling, though the former is regarded as somewhat of an experiment. Calla Oils, Ltd. has made a tentative location in LSD 7, Section 24-20-3w5. Dallas Oil Co.'s No. 1, LSD 11, Section 20-19-2w5, is rigging up. Turvalta Oils, Ltd. has spotted a test on LSD 13-14, Section 5-20-2w5. Model Oils, Ltd. has a location in LSD 8, Section 22-20-3w5. This company is also planning to drill in the Montana and Wainwright fields. Altamont Oils, Ltd. has a location in the S half NE, Section 8-19-2w5.

In the Moose Mountains district, Cherokee Oils, Section 33-23-5w5, is making new hole at 1,507 feet with the diamond drill, and running double tower. On the Morley Indian Reserve, Reserve Oils, Ltd. has a camp established and derrick timbers on the ground for a test. A diamond drill outfit will be used. Signal Hill's No. 2. LSD 9, Section 34-23-3w5, is at 2,040 feet and underreaming. Signal Hill's No. 1, same section, is shut down at 2,420 feet.

A new area in Townships 19 and 20, Ranges 3 and 4, west of the Fifth, is to be developed by Scott Brothers Syndicate of Calgary, which recently filed on 12,000 acres. Tests will be located by Julius Rickert, who will have charge of operations. Mr. Rickert located in 1901 the first oil well drilled in Alberta, put down in the Pincher Creek Field and which came in with a flush production of 300 bbls. a day, but failed to hold up. John Drader, who drilled the Pincher Creek well for the Rocky Mountain Development Co., will have charge of the Paramount Oil's test, east of the Scott holdings.

In the Aldersyde district, south of Calgary and east of the Turner Valley Field, the Ranchman's Oil & Gas Co. is preparing for a test on the Bird Dome, in Section 13-20-9w4, close to the town of Aldersyde. The location is a few hundred feet from the old Drumheller well on this section. This test, put down in 1914, was carried to 930 feet, and developed some gas.

In the Acadia Valley, the Fuego Oil Co.'s deep test will resume drilling about May 1. The company is now overhauling its plant, and has secured 3,400 feet of 6-inch casing and 4,000 feet of 1-inch cable.

KANSAS FIELDS

(Continued from Page 42)

Beacon Oil Co. in its No. 2, CWL NW NE SE, Section 23-26-9. Sand was found at 2,215-42 feet. In the same section, the Continental Oil Co. spudded its No. 2, C SE NE NE.

Cowley County

In the Eastman Pool, the Lewis Oil Co. and Brewer completed a 10-bbl. well in their No. 1, C SW SW NE, Section 31-30-6, after shooting it with 40 and 80 quarts. Top of sand was 2,839 feet, carrying 1,000,000 feet of gas at 2,862 feet, oil at 2,910-26 feet, and total depth is 2,931 feet.

Rig is on the ground for a wildcat test between the Trees Pool and Winfield. It is the Roxana Petroleum Corp.'s No. 1 Churchill, C NE NE SW, Section 25-31-3.

In the Slick-Carson Pool, the Carter Oil Co. is building a rig for No. 10 Waite, C SW NE SE, Section 19-32-3.

In the Rainbow Bend Pool, the Wentz Oil Corp. completed No. 2, C E half NE SE, Section 17-33-3, for 150 bbls. in sand at 3,167-84 feet. The Waite Phillips Co. completed No. 18, C NW NE NW, Section 21-33-3, for 125 bbls. from sand at 3,202-29 feet.

Across the line in Sumner County, the Marland Oil Co. spudded and shut down No. 1, C SE SE NE, Section 9-33-2, and the Sinclair Oil & Gas Co. spudded No. 1 Holt, NE SE SE, Section 24-33-2. In the Padgett area, the Marland Oil Co.'s No. 1, SW cor. NW, Section 24-34-2, was dry and abandoned at 3,465 feet.

In the Winfield Pool, Cowley County, the J. A. Hull Co.'s No. 15, C SE NW NE, Section 24-32-4, was shot with 180 quarts in sand at 2,971-3,046 feet, and produced 125 bbls. afterward.

A rig was on the ground for Shawver & Witt's No. 1 Shirtz, C NE NE NE, Section 20-34-3.

A duster was plugged by the Roxana Petroleum Corp. in its No. 1, C SE SW SE, Section 7-35-3, at 3,865 feet.

Northeast of Arkansas City, a 3,500,000-foot gasser was completed by Rosenthal in his No. 1, C NW SE, Section 14-34-4. The gas sand was found at 2,137-44 feet.

Western Counties

In the Russell Pool, the Wilcox Russell Oil Co.'s No. 16, C SE SW NW, Section 17-12-15w, was completed for 240 bbls. of 39 gravity crude at 3,009-19½ feet. The same company's No. 17, SW cor. NE NW, same section, was drilling at 1,000 feet; No. 1, C NW SE NW, Section 17, was drilling at 600 feet; No. 2, C NE NW SW, Section 17, was spudded; and No. 1, C NE NE SE, Section 18-12-15w, was spudded.

A new Barber County test is Vickers & Miller's No. 1, C SW SW SE, Section 35-32-14w, which was drilling at 420 feet.

In Ellsworth County, C. J. Wrightsman and the Phillips Petroleum Co. were drilling at 600 feet in their No. 1, C SW, Section 3-16-8w.

In Rice County, the Wilcox Oil & Gas Co. was drilling No. 1, C SW SW NE, Section 35-20-6w, at 700 feet.

Stearns & Streeter spudded their No. 1, C SE SE SE, Section 17-21-6w.

In Reno County, a rig was on the ground for Patton and the Cassoday Oil Co.'s No. 1 High, C SE, Section 9-25-7w.

In Kingman County, Crawford & McKenna were drilling at 1,435 feet in their No. 1, C NE NE NW, Section 31-28-5w. The Vickers Petroleum Co. had a rig on the ground for No. 1 Kenny, C NW, Section 35-30-9w, and Wakefield and others had a rig on the ground for No. 1 Muir, CSL SW SE, Section 28-31-9w.

In Sedgwick County, the Barnsdall Oil Corp. abandoned its No. 1-A, SW cor. NE, Section 32-29-2w, as dry at 3,771 feet.

In central Sumner County, a rig was on the ground for Broadhurst & Helmerick's No. 1 Chaney, C S half NW, Section 13-35-2w.

OKLAHOMA FIELDS

(Continued from Page 42)

rie Oil & Gas Co. was rigging up a rotary for No. 1 McCracken, NE cor. SW, Section 10.

The Southwestern Petroleum Co. shot its No. 3, NE cor. NW NE, Section 11-14-5, with 70 quarts and it made 200 bbls. afterward. The initial production of the well was 322 bbls. from sand at 3,401-40 feet. The Texas Company was building a rig for No. 1 Smith, NW cor. NE NE, Section 11-14-5.

Okfuskee County

The Darby Petroleum Co.'s No. 2, C NE NW SW, Section 14-13-9, swabbed 45 bbls. of oil and 15 bbls. of water from sand at 1,058-76 feet, and was completed. The same company and Burke-Greis Oil Co. had a rig up for No. 3 Callahan, CNL NE NW SW, same section.

North of Okemah, the Central National Oil Co. completed No. 1, NE cor. SE, Section 28-12-10, good for 75 bbls. from sand at 2,940-65 feet.

The Barnsdall Petroleum Corp.'s No. 2, CEL SE SW SE, Section 3-12-11, was brought in making 455 bbls. from sand at 2,602-26½ feet but dropped to 165 bbls. The Amerada Petroleum Corp.'s No. 12, C SE NE NW, Section 13-12-11, made 68 bbls. after a 7-quart shot in sand at 3,364-71 feet. Hartman & Mann spudded their No. 2, C SE SW SW, Section 22-12-11. The Josey Oil Co. had a 100-bbl. showing in its No. 2, CEL NE SE, Section 32-12-11, and it was to be shot, while the same company's No. 13, C SW NW SW, Section 33-12-11, was drilling at 440 feet.

South of Okemah, C. J. Wrightsman was drilling his No. 1 Butler, C NW SE SE, Section 26-10-10, at 340 feet.

The Phillips Petroleum Co. abandoned its No. 1, C SE NW SW, Section 15-10-9, as dry at 3,263 feet. The Minnehoma Oil Co.'s No. 1, C NE NE SE, Section 17-10-9, had a rig on the ground, and the Kingwood Oil Co. had a rig up for No. 1 Tecumseh, C NW SE NW, Section 21-10-9.

The Mitchell Oil Co. plugged its No. 1, C SW SE NW, Section 2-10-12, an old well deepened, at 3,421 feet. The Riverland Oil Co. was drilling at 500 feet in its No. 1, NE cor. NW NW, Section 30-11-11.

Lincoln County

In southern Lincoln County, the Independent Oil & Gas Co. and McCullouch spudded their No. 1, C NE NE NW, Section 1-12-5.

Seminole County

In the Cromwell Pool, the Continental Oil Co.'s No. 3, C NW SE SW, Section 28-11-8, was completed for 170 bbls. after it was shot with 20 quarts in sand at 3,420-56 feet. The Prairie Oil & Gas Co. was drilling at 1,200 feet in No. 1, C SW NE SW, Section 28-11-8. The Carter Oil Co.'s No. 4, C NE NW NW, Section 33-11-8, made 45 bbls. after a 5-quart shot in sand at 3,407-24 feet.

The Magnolia Petroleum Co. set surface casing in its No. 1 Simpson, C NE NW SE, Section 10-9-5.

In the I. T. I. Pool, the Amerada Petroleum Co.'s No. 1, C NW NE SE, Section 24-9-6, was drilling at 1,000 feet. The Barnsdall Oil Corp.'s No. 2, C NE SE NW, same section, was drilling at 300 feet, and the Carter Oil Co.'s No. 1 Carter, C SW NW NE, same section, was building a rig. The Indian Territory Illuminating Oil Co.'s No. 2, C NE NW SE, Section 24, was drilling at 200 feet.

South of Cromwell, T. B. Slick spudded his No. 1, C SE SW SE, Section 7-9-8. The Shaffer Oil & Refining Co. had a rig on the ground for No. 4 Jefferson, C NW NE NE, Section 18-9-8.

In the area west of the Wewoka Pool proper, the Magnolia Petroleum Co. and Gypsy Oil Co. were rigging up No. 2, C

NW NE NW, Section 23-8-7, and the Mid-Continent Petroleum Corp. was also rigging up No. 1 Johnson, C NW NW NE, same section.

Following are some of the Wewoka deep tests which are just getting started, from building rigs to cementing surface casing: The Magnolia Petroleum Co.'s No. 2 Gilstrap, CNL NE NE SE, and No. 2 Hawkins, C SE SW NE, Section 6-7-8; the Homa-Okla Oil Co.'s No. 4 Davis, C NE SE NE, same section; the Dixie Oil Co.'s No. 5 Knight, C NE SW NE, same section; the Magnolia Petroleum Co.'s No. 6, C NW SW NW, Section 5-7-8, and No. 8, C NE SW NW, same section; the Independent Oil & Gas Co. and Atlantic Oil Producing Co.'s No. 3 Simon, CNL NE NW SW, and No. 2 Simon, C NE NW SW, Section 5-7-8; the Dixie Oil Co.'s No. 3 Grover, C SW NW NE, Section 5. The Magnolia Petroleum Co. had a rig on the ground for No. 1, C NE NE SE, Section 29-7-8.

The Transcontinental Oil Co. had a rig on the ground for No. 2 Davis, CEL NE NE SW, Section 22-7-7, a twin to No. 1, and the Magnolia Petroleum Co. spudded No. 1, C SW SW NE, same section.

Pawnee County

The Magnolia Petroleum Co. completed No. 3, NE cor. SW SW, Section 9-20-6, for 53 bbls. naturally from sand at 3,030-70 feet, total depth 3,077 feet, and was building a rig for No. 2, NE cor. NW SW, same section. The Prairie Oil & Gas Co.'s No. 1, NW cor. NW SW, Section 15-20-6, an old well deepened, made only 8 bbls. at 3,120-33 feet. The Westerly Oil Corp. was cleaning out No. 5, SW cor. NW SW, Section 22-20-6, and it was flowing 80 bbls. daily from sand at 3,350-84 feet. This well flowed 144 bbls. the first 18 hours after deepening to this sand.

Payne County

A rig was up for A. A. Bailey's No. 1 Fisher, NE cor. SW, Section 11-19-6. The Magnolia Petroleum Co. completed No. 1, C NW SE SW, Section 8-19-5. It made 115 bbls. naturally from sand at 3,074-3,100 feet.

Miscellaneous

East of Shawnee in Pottawatomie County, Clark & Edwards were drilling their No. 1, C E half W half, Section 16-10-5, at 800 feet.

In Texas County, the Pan Oklahoma Oil Co. was drilling at 710 feet in its No. 1, SE cor. Section 4-1n-12e.

DESCRIBES CONDITION IN VENEZUELAN FIELD

L. C. Sauter, with the Venezuela-Gulf Oil Co. in Venezuela, in a letter to the Houston Chronicle, describes conditions in that country and disposes of false reports concerning living conditions. The letter contains information of value to field workers who contemplate going to the fields of Venezuela.

Mr. Sauter writes as follows:

"First, it may surprise you to learn that there are probably 2,000 oil men in Venezuela that came from around Houston.

"As for the dangers here, that is a lot of bunk. This country could teach America a lot about law and order. The only bad Indians are found in the upper Orinoco and upper Magdalena basins. And, strangely, the best people in Venezuela live next door to them. These are a light complexioned, rosy-cheeked people that live in the mountain region of western central Venezuela. They live mostly by agriculture. They raise corn, wheat, potatoes and fruits. Their climate is a sort of perpetual spring.

"A few years ago two Standard Oil geologists went on an exploring expedition into the southwestern part of Venezuela next to Colombia. Two natives in the party were shot by bow and arrow by hidden Indians. A photograph was taken before the arrows were removed. This picture is famous. It shows one native with an arrow through his head and still alive and walking. As soon as the arrow was removed the native died. This is the first picture shown to the stranger at the postcard stands in Maracaibo.

"We hear that three Swiss geologists lost their lives in Colombia, just across the border, recently. But the natives in Colombia are allowed guns and knives and are generally known as bad hombres. So it is doubtful whether the Indians or the Colombians are guilty.

"But all this bad country is several hundred miles from the main oil district.

"Human life is safer here than in Houston, for there is not so much danger of being run down by some mule driver mentally in a high-powered motor car. No danger of getting shot, because no one can obtain a gun to shoot with.

"Most of the country is healthy and the climate is no hotter in the summer than in Texas, and the winter is ideal. I have encountered more mosquitos in south Texas in one night than in Venezuela in 11 months. Of course, there are bad places, but no worse than Texas City or Port Arthur.

"What we need down here very much is a direct steamship line to Houston. If we only had one boat that made the trip once a month. As it is, all of us must come and go by New York City, a long, expensive trip. Also, lots of oil well supplies from Houston and Tulsa must go the same way. I believe a small boat carrying passengers and freight could get cargoes both ways by making Cartagena, Colombia and Curacao, Dutch West Indies on the trip."

FIFTY NEW PRODUCERS IN POLAND'S FIELDS

By Charles E. Kern
Washington Bureau
The Oil and Gas Journal

WASHINGTON, D. C., Apr. 19.—Gross production of crude petroleum in Poland amounted to 811,910 metric tons in 1925, and net production to 736,880 tons, compared with 770,791 and 710,727 tons, respectively, in 1924, Assistant Trade Commissioner L. J. Cochrane, Warwas, advises the Department of Commerce.

Losses and use at the wells accounted for 60,064 tons in 1924 and 75,030 in 1925. Gross production showed an increase of 5.3 per cent, and net production 3.7 per cent. The chief production continues to be in the Tustanowice, Borysław and Mraznica areas of the Drohobycz district, which in 1925 had a total output of 540,590 tons.

Although new drilling is reported in Poland to be handicapped by capital shortage, the number of producing wells in the two principal districts—Drohobycz and Stanislawow—increased by 50 during 1925. In the latter district drilling is particularly active.

During both 1924 and 1925 the Polish petroleum industry is said to have suffered from high production costs, which have been estimated at present about 16 per cent higher than in Russia, Rumania or the United States.

Gas production in Poland has risen from 437,945,000 cubic meters in 1924 to 535,007,000 in 1925. A considerable amount of this gas was not used, and the proper utilization of gas actually produced and also of large known reserves, both at the fields and for lighting and heating in Lemberg, Cracow and other cities, remains a problem for future consideration.

TO PROBE CALGARY COMPANIES

CHATHAM, Ont., Apr. 17.—Former shareholders of the Alberta Petroleum Consolidated. Ltd., which operated at the time of the Calgary boom, are organizing with a view to securing an official inquiry into the disposition made of the company's assets when it was wound up some years ago. The inquiry will, it is stated, cover stockholders in the Herron-Elder Oil Co., Okotoks Oil Co., Alberta Petroleum Co., and other companies merged in the Alberta Petroleum Consolidated, Ltd. The Alberta Consolidated, Ltd. was capitalized at $20,000,000 and secured a small production in its No. 1 well, in the Turner Valley Field; but later went into liquidation.

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Catalog with description of types with prices and weights sent on request.

Adequate Refining Capacity Needed

National Petroleum Association Told of Possible Shortage When Required Finished Products are Considered

By Chas. L. Parmelee*
Consulting Engineer, Woolworth Building, New York City

It is commonly said that one of the difficulties with the petroleum refining industry in the United States is overcapacity. While it is true that measured in gross barrels of possible throughput there is an apparent excess capacity, it is not true that there is an excess of adequate refining capacity. In fact, when the required finished products are considered, there is indicated an apparent shortage at the present time and for the near future, a large deficiency.

The first and fundamental factor controlling this situation is the character and amount of available raw material. In 1925 there was produced in the United States and imported a total of about 818,000,000 bbls. of crude oil. Of this, about 10 per cent was not considered refinable by present processes. While there is little reason to expect any material change in the available supply this year, it is to be borne in mind that price incentive has heretofore and may again result in added supply and that under the urge of insufficiency of finished products, new means may be developed for the refining of those crudes now used as fuel oil.

The demand for motor fuel is steadily increasing. If the January-February 1926 figures are taken as a criterion, and for the past five years they have given a remarkably uniform guide to the year's consumption, the 1926 demand for domestic and export motor fuel will be about 320,000,000 bbls. Various estimates place the figure at from 280,000,000 to over 320,000,000, the latter being the estimate of one of the largest oil concerns in the world. A domestic and export consumption of 295,000,000 bbls. in 1926 has been used in these computations as a very conservative figure.

The domestic demand for motor fuel in 1930 is estimated by the Committee of Thirteen, A. P. I., as 315,000,000 bbls. If to this is added 40,000,000 bbls. for export, the 1930 demand is indicated as about 355,000,000 bbls. This may be reached in very much less than four years.

The available supply of natural gas gasoline, benzol and imports may be taken as 31,000,000 bbls. for 1926 and 35,000,000 for 1930, leaving 264,000,000 and 320,000,000 as the indicated demand for petroleum motor fuel from United States refineries for these years.

In 1925, the average natural gasoline obtained from the crude oils run to stills was less than 23 per cent. The present indications are that the total available crude oil supply will be maintained only by increasing the heavy oil output. The supply of light oil appears to be steadily decreasing. If the heavy oils are refined, the percentage yield of natural gasoline will be reduced. There is, therefore, no reason to expect any increase in this yield from the crudes run in the next four years.

Two Major Factors

If sufficient crude oil of the same grade as run in 1925 was available and all of the refineries in the United States in operation January 1, 1926, were operated at 85 per cent rating for the year, there would be produced about 180,000,000 bbls. of natural gasoline and about 90,000,000 of cracked gasoline, or a total of about 270,000,000 bbls. This is less than 3 per cent in excess of a most conservative estimate of the demands for this year, and 16 per cent less than a very authoritative estimate. The possibility of this condition arising is affected by two major factors.

First, there is required about 795,000,000 bbls. of refinable crude oil, or 7.4 per cent more than was run to stills in 1925, when 18,000,000 bbls. of light oil was drawn from storage. The supply of refinable crude may be increased if the price justifies the cost, but there is little prospect of any material increase at an early date.

Second, under the present price structure a very large number of refiners have been and are operating at a loss. Several have been shut down since the first of the year.

Under present price conditions, no refinery that is not constructed and operated in the most efficient manner can operate at a profit, and of such refineries only those that fall in one of three groups can show reasonable returns.

1. Those refineries which are classed as "complete" and can adjust their output to those commodities which are most profitable.

2. Those refineries which by reason of crude supply, special products or established market can secure a better return than the average price differential.

3. Refineries equipped to produce the maximum possible gasoline yield from the crude.

Economic Crude Capacity

The average skimming and topping plant can only operate at a loss today. Of the refineries operating January 1, 1926, 196 of a capacity of about 697,000 bbls. per day were classified as skimming and topping plants. Of these, 58 had cracking equipment of a charging capacity of about 163,000 bbls. per day. Rating the economic crude capacity of these skimming plants as the same as the cracking capacity, omitting their excess capacity and including full capacity for all other refineries, the total crude capacity indicated is about 2,028,000 bbls. per day, or about 629,000,000 bbls. per year. This is the total economic crude capacity of the petroleum refineries in the United States under the present price structure, if all these refineries fall within the limitations above given. It is well known that many of them fail to meet the efficiency specification. These refineries can produce about 227,000,000 bbls. of motor fuel or about 37,000,000 bbls. short of that which is necessary to meet a most conservative estimate of the apparent gasoline demand for this year, and 93,000,000 bbls. short of that which may be needed in the very near future.

These conditions will result in the crude supply being absorbed to their full capacity by those plants which are most efficient, premiums being paid therefor, if necessary. The price structure will then change to encourage further crude production and to permit the operation of sufficient less economical plants to provide for the production of the necessary commodities. This will result in increased profits for the more efficient plants which will thus be encouraged to expand. The price structure will then adjust to something like its present ratio which will again put the inefficient plants on a non-profitable basis. This cycle will continue with the gradual elimination of all but highly efficient complete, specialty and gasoline plants except in a few instances where other conditions are especially favorable. If this elimination is permitted to take its full course there will be lost and duplicated a present investment of upwards of $70,000,000, a large part of which can and should be conserved.

Indicated Demand and Supply

Two tables have been prepared to show the indicated demand and supplies under various conditions in 1926 and 1930, or earlier. All figures given are not absolute or exact. They are suggestive only and are subject to possible wide variations from the facts as ultimately developed. The limitation put on the possible production by shortage of crude must be borne in mind.

In the left hand section are given certain estimates of the probable demand. These require no explanation.

The refining capacity of the United States which was in operation January 1, 1926, has been divided into two classes.

Group A—Skimming and topping plants in excess of the installed cracking capacity therein. Total capacity 534,372 bbls. per day.

Group B—All other refineries. Total capacity 2,028,000 bbls. per day.

Group B—Includes nearly all of the Pennsylvania and West Virginia refineries. They are assumed to have a special field by reason of their established market. As will be shown, there is ample demand for all the products of these refineries at full capacity, provided they are on an efficient basis. Insofar as they are abandoned, it will be necessary to supply equal capacity elsewhere.

Table No. 1 shows that the refineries of the United States cannot supply the probable motor fuel demands for 1926, unless a considerable portion of the simple skimming and topping plants are op-

(Continued on Page 145)

TABLE NO. 1
Indicated Conditions for 1926
(Barrels of 42 U. S. gallons.)

DEMAND			SUPPLY			
			Group "B" Refineries	Shortage	Group "A" Refineries (Alternatives)	
					Skim. Only	Full Crack.
Motor fuel:			Number of refineries	214		
Domestic	260,000,000		Crude capacity (per day)	2,028,000	396,000	212,000
Export	35,000,000		Cracking capacity (per day)	968,000	.....	212,000
Total		295,000,000	Crudes (per year)	629,000,000	123,000,000	62,000,000
Deduct:			Natural gasoline (per year)	142,000,000	37,000,000	18,500,000
Casinghead	25,000,000		Cracked gasoline (per year)	85,000,000	.....	18,500,000
Benzol	2,000,000					
Imports	4,000,000					
Total		31,000,000	Refinery gasoline supply	227,000,000	37,000,000	37,000,000
Refinery gasoline demand		264,000,000				
Kerosene		60,000,000	Kerosene	50,000,000	10,000,000	10,000,000
Diesel engine oil	15,000,000					
Lubricating oils	30,000,000					
Wax	3,000,000					
Asphalts and road oils	20,000,000					
Miscellaneous refined oils	8,000,000					
Total		75,000,000	Miscellaneous refined oils	75,000,000	.....	.....
Fresh gas oil	30,000,000					
Fresh fuel oil	150,000,000		Fresh gas and fuel oil	66,000,000	114,000,000	72,000,000
Total		180,000,000	Residuum, gas and fue oil	164,000,000	16,000,000	.....
Gas and fuel oil residuum usable		180,000,000	Coke, fuel and loss	47,000,000	.....	11,000,000
					4,000,000	8,000,000

TABLE NO 2
Indicated Conditions for 1930
(Barrels of 42 U. S. gallons.)

DEMAND			SUPPLY			
			Group "B" Refineries	Shortage	Group "A" Refineries (Alternatives)	
					Skim. Only	Full Crack.
Motor fuel:			Number of refineries	214		
Domestic	315,000,000		Crude capacity (per day)	2,028,000	1,000,000	520,000
Export	40,000,000		Cracking capacity (per day)	968,000	.....	520,000
Total		355,000,000	Crudes (per year)	629,000,000	310,000,000	155,000,000
Deduct:			Natural gasoline (per year)	142,000,000	93,000,000	46,500,000
Casinghead	30,000,000		Cracked gasoline (per year)	85,000,000	.....	46,500,000
Benzol	3,000,000					
Imports	2,000,000					
Total		35,000,000	Refinery gasoline supply	227,000,000	93,000,000	93,000,000
Refinery gasoline demand		320,000,000				
Kerosene		60,000,000	Kerosene	50,000,000	10,000,000	10,000,000
Diesel engine oil	20,000,000					
Lubricating oils	35,000,000					
Wax	2,000,000					
Asphalts and road oils	20,000,000					
Miscellaneous refined oils	8,000,000					
Total		95,000,000	Miscellaneous refined oils	95,000,000	.....	.....
Fresh gas oil	30,000,000					
Fresh fuel oil	150,000,000		Fresh gas and fuel oil	46,000,000	134,000,000	198,000,000
Total		180,000,000	Residuum, gas and fuel oil	164,000,000	16,000,000	.....
Gas and fuel oil residuum usable		180,000,000	Coke, fuel and loss	47,000,000	.....	40,000,000
					9,000,000	12,000,000

*Before National Petroleum Association, Cambridge Springs, Pa.

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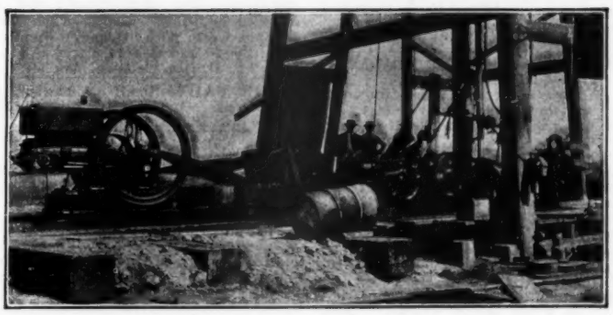

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The OIL and GAS JOURNAL
TULSA, OKLA.

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WILL PURCHASE settled Kansas production if not less than 200 barrels available in locality. Box B-261, The Oil and Gas Journal, Tulsa, Okla.

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WANTED—20,000,000 cubic feet gas daily for gasoline and carbon black. Wire or write Box 56, Fairbanks, La.

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Better Demand in Chicago Territory

Refiners Are Tending to Ask for Higher Prices, but Some Think They Should Wait for More Consumption

By J. B. Waldo

CHICAGO, Apr. 17.—The local oil trade considers that the season is now close at hand when a decided increase in the consumption of gasoline may be anticipated. Some leading distributors say the indications are that within a week there will be much more free ordering of gasoline by the country trade. At least they expect the orders from their own stations to show this increase. One leading company stated that looking over the tabulation of station sales it was noticeable that first this one and then some other began to do a good business. The local managers of these stations pay no attention to the markets. They are there simply to sell and unless directed by the main office temporarily to change their usual practice, which is seldom, they order when they need gasoline. Up to the present there has been very little ordering from these station managers. They have not been selling very much gasoline and have not been obliged to replenish their storage. Now they have begun to do a larger business and cannot hold off from ordering much longer. The manager of one jobbing concern with stations along the Wisconsin-Illinois State line stated that during the first half of April his company had ordered in only 3 cars of gasoline against 11 during the same period last year.

Another thing that will help business in the country districts around this city is the removal of the annual embargo against the use of heavy trucks on the dirt roads.

Better Inquiry

Just at the close of the week, there was a better inquiry to say the least and some of the sellers reported a decided change for the better but this was not general. Still there is some better demand with a decided tendency on the part of the refiners to ask for higher prices. Not all the refiners want an early price change. Some say that before they begin to mark up refinery prices it would be better to wait until they get a volume of business started that will carry them for a while and put something substantial behind the advance. It might also be well to let the marketers get rid of the cheaply purchased gasoline which some of them still have coming to them. There are quite a few cars of gasoline bought at prices that can be sold at 10 cents and less if necessary that must be moved shortly and with this gasoline out of the market the field will be at least that much more free for higher prices.

There are many refiners in this market who believe stable prices will be most quickly secured by making haste slowly in advances. They want to see a better demand than can be expected for a short while. They also do not want to see the production increased materially so early in the season for touring. Prices have tended to slightly higer levels, yet there has been only a partial change. There has been a larger percentage of the sales at better than 10 cents for the week but there have been a considerable number of orders taken at 10 cents and occasionally a little distress oil at 9⅞ cents but the quantity has decreased and the business is moving toward a 10¼-cent flat level. Here some would like to see it stay for a while and others want the 10½-cent price as soon as possible. There has been some demand for the 56-58 gravity and the 437 end point has sold at 10 cents in a few cases with the 450 end point selling at 9¾ cents to the trade.

The market for the higher tests has been rather under the shadow of the proposed change in the specifications of "Texaco" gasoline. There seems to be no doubt that the sellers of this brand have planned to change their specifications to a grade with a 400 end point and a 63 gravity. Refiners state this will be very easy to run with a Holmes-Manley still or any good process still. Dealers who have this brand as their chief line are reported to have drawn out of the market for the higher gravities as they claim what they will get under their contract with the makers of "Texaco" gasoline will be at least as good if not better than a 60-62 400. There are other companies to be considered. Some of the leading oil men here expect The Texas Company to secure a large gallonage for its product as the cost is no greater than the present product. There are some who say that so far as the motorist is concerned the regular U. S. Motors gasoline will give just as little trouble and more mileage even if not quite so quick on the start but before making any real comparisons they want an opportunity to test the new product. If its makers succeed in materially increasing their sales of gasoline to domestic users there will be a counter play on the part of the companies who stand to lose business and this simple move of The Texas Company management is in the eyes of oil men fraught with all sorts of possibilities.

Kerosene Advanced

The advance in kerosene tank wagon prices over this territory apparently supprised a lot of oil men. They had expected it for so long they forgot to be prepared for it. This was evident in the flood of buying orders received just as soon as the first news of the change was broadcast. Hundreds of cars could have been sold if the refiners were willing to sell at 7 cents. There was very little oil, if any, sold at that price. The price of 41-43 gravity in car lots to the trade advanced to 7¼ cents immediately and a continued demand at that price resulted in some refiners, who were fortunate in being in position to promise deliveries and booking all the business they wanted, advancing their prices to 7½ cents. The jobbers have begun to realize the supply of kerosene at a low price is not possible at an early date and that the increase in the refinery runs does not necessarily mean more kerosene produced, unless the price pays the refinery to make the cut. At this writing several leading refiners are selling 41-43 kerosene at 7½ cents and U. S. Motors gasoline at 10¼ cents which is more closely priced than for years. There is nothing doing in the 42-44 gravity. If run it is not being offered or sold in any quantity.

Figuring on Distillate

The warmer weather has resulted in a falling off in the demand for furnace distillate. The supplies are light and those dealers so situated as to supply or a continuing demand as to need additional cars are few but they have to pay the price which holds firmly at about ⅛ cent below last week's figures. From now on the chief concern will be as to the next season and judging by last season refiners will be very reluctant to quote and it may be several months before anything definite develops. Such talk as there is favors the restricting of furnace distillate to one grade, eliminating the color and running to a standard gravity and flash which will be that of the product which can be readily refined in quantities. Some refiners may seek the business of those domestic users whose burners will not operate successfully on anything but a special fuel oil but the specifications are becoming standardized as the requirements of the equipment are better known and the fuel possibilities better understood. There seems to be a very general idea among refiners that they will do well not to make contracts and be obliged to prepare for a demand that may not come. They will sell at the spot market or for delivery over brief periods and avoid contract entanglements.

Gas Oil Limited

Some oil men here say the gas oil market is a little easier but this seems so far as the writer can learn to result from the fact that some of the marketers and truck distributors had bought a little more gas oil than they needed and unloaded during the week selling at a slight decline under the refinery market. The demand is not spectacular, it is the limited supply that is holding the market at its present levels. The demand from such of the gas companies as still use gas oil is declining and they are very largely running on stocks on hand when they have any to draw on while waiting for a chance to buy on a lower level. Refiners have stocks but in most such cases are holding them for their cracking plants and the rather small output of the cracking plants does not meet the demands of the trade who can use this oil. The market for a good gas oil is still 4¼ to 4⅜ cents with occasional sales at 4⅛ cents for dark gas oil.

Fuel oil is in one of those positions when it seems almost stagnant. Dealers say it is hard to buy and just as hard to sell, or more so at prices which the refinery market obliges the fuel oil specialist to ask of his customers. Many large refiners are selling direct both on contract and in the spot market at practically the same prices to the large consumers that are made to the marketer so the margin for the latter is a close one. Buyers are still awaiting lower prices before placing time contracts and in the meantime are shopping around. This makes an uncertain and difficult market, the condition being intensified by the small stocks available from refiners especially on the gravities ranging upward from and including 24-26 refinery fuel oil. There has been considerable talk of larger supplies but so far the contrary seems the case. A little 24-26 refinery fuel oil was offered but the refiner was firm for $1.40 per barrel and this is just about the price that the consumers can be made to pay.

The Smackover situation shows no improvement. The top of the market is around $1.10 which is the price asked by the producers for a treated oil from steel storage. There are offerings of Smackover oil coming to the city on contracts made early in the season which is not needed by the marketers and distributors also close prices from refiners and producers in that field that keep the market unsettled and prevents any improvement in prices. The general view is fuel oil cannot go higher and may go lower, so why buy for the future. On the other hand refiners when asked for prices over May reply they are sold up and do not know what they will have to offer during that month so there is little doing except routine filling of orders. Quite a number of marketers are not trying to do any business in fuel oil but are confining their activities to the lighter products.

Lubs Active

Lubricating oils are moving quite actively as the jobbers are now ordering out their early spring requirements. Many jobbers and dealers have contracts for their supplies but they have been slow in giving shipping instructions as their lubricating oil business was very quiet with so few autos running. Now they are sending shipping instructions and the refiners are delivering large quantities both in car lots and in drums. The price situation is very steady not to say firm at present on all grades. One leading dealer in commenting on the keen competition and the increased number of sources of supply offered the buyers stated that most buyers had some favored product which they were satisfied answered their requirements and would give satisfaction to their customers and they were very slow to change.

Tank Wagon Change

The only change in the tank wagon market in this territory has been the advance of 1 cent a gallon in kerosene April 16 applied to the entire territory. There is some talk that the present kerosene prices are the highest on record but this is a mistake. During the summer of 1920 a high point in tank wagon prices was reached of 19½ cents and at the same time the refinery prices were between 11 and 12 cents. A year later in August, 1921, records show kreosene had dropped to around 2 cents. The movement of kerosene prices is a good illustration of the law of supply and demand. There is little talk of any advance in gasoline tank wagon or station prices as conditions are slow to develop and some leading distributors expect there will be a more stable market than for years.

EASTERN MARKET GENERALLY STRONG; DESPITE UNSEASONABLE WEATHER

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church St., New York

NEW YORK, Apr. 19.—General strength featured the oil markets on the Atlantic Coast during the past week, despite unseasonably cold weather. Spring is really a month behind in this section. If the marketers can tide over this period without price reductions, the arrival of warm weather should bring marked improvement.

Weather conditions are a factor which oil men cannot forecast, and it is admitted that stocks of oil on hand on the Atlantic Coast are fairly heavy, due to heavy production and arrivals during March. Receipts continue at a fairly fast rate and therefore a change for the better in the weather would be especially welcomed under the circumstances.

Arrivals of gasoline from California continue large and reports from the Pacific Coast are that the movement out of oil ports are of record, which indicates an increase, rather than a decline, in receipts here.

Tank car offerings of Mid-Continent gasoline are increasing somewhat and 58-60 gasoline can be had at slight recessions, despite reported strength in refinery quotations in the southwestern area. The sale of about 20 cars at 12½ cents was reported, which is a reduction of about ½ cent below the price which factors were asking a little more than a week ago. Tank car business, however, is overshadowed by the arrivals by tanker.

Since the first of the year 2,500,000 gallons of gasoline have arrived at New York from Trinidad. This is said to be

(Continued on Page 143)

EASTERN MARKET STRONG DESPITE BAD WEATHER

(Continued from Page 142)

50-52 gravity and is mixed with casinghead before being marketed, according to reports in the trade, which are to the effect that the mixture is being retailed at 3 cents or more below the average service station prices. This gasoline is said to be delivered on a yearly contract basis, which contract does not expire until after the close of the big consuming season.

Kerosene Benefited

The kerosene market is somewhat more firm due to cold weather and its greater use for heating purposes. Furnace oil is also in better demand. Prices, however, are unchanged. Reports of a general advance in kerosene tank wagon prices in the Middle West were received with interest, but eastern marketers say this does not necessarily mean a rise here.

The demand for kerosene by refiners for cracking and the growth in domestic consumption due to the coal strike have contributed to the unexpected strength in this product. Exports of kerosene from the Atlantic Coast have been improving, also.

Gas Oil

The market for gas oil is unchanged. With prices ranging from 5½ to 6 cents, depending on gravity. The grades ranging from 36-40 are said to be in especially good demand for cracking purposes.

Fuel Oil

Diesel oil is firm, and is moving steadily.

Bunker fuel oil was in fair demand, but prices tend to soften as a result of the Mexican settlement. Some recent good wells in Mexico have helped to keep quotations for heavy oil down, with a consequent similar effect here.

Lubricating Oil

The market for lubricating oil continues unchanged. Demand is falling off in some industrial lines, according to jobbers, and cold weather has affected automobile consumption somewhat. Despite this prices are holding firm. The next few weeks are expected to determine the trend of prices inasmuch as spring weather is due, and the pace of industrial activity can be more definitely established for the year.

A slight softening tendency in cylinder oils is noted in some directions, but there has been an unusually good export movement which has helped the situation materially.

Paraffin Wax

The demand for wax has fallen off somewhat during the last week, and it is reported prices are being shaded somewhat. The domestic trade has not come up to expectations so far this year, and makers had prepared for a better season.

Petrolatum

The market for petrolatum continues under normal. Prices are holding fairly well, especially so far as amber and light amber are concerned. Cream, lily white and snow white have a tendency to be shaded. Lily white is moving at around 8 cents, with some small business being done at 7⅞ cents.

Export Situation

The New York oil export market is holding up well. Bulk shipments fell off slightly during the week just past, which is natural after about a month of unusual activity.

If there was any feature during the past week it was continued large shipments of petroleum asphalt, which aggregated 2,567,250 pounds for the week ended April 14. Principal exports of this product from New York during the last seven weeks were as follows:

Week ended—	Pounds
April 14	2,567,250
April 7	2,246,850
March 31	1,863,900
March 24	2,943,000
March 17	2,016,000
March 10	3,387,600
March 3	1,142,550
Total	16,167,150

This is the largest movement in a similar period ever recorded, it is stated. Exports were divided largely between New Zealand and the principal European countries, those to New Zealand being particularly heavy. The above exports were all in barrels.

The following table shows principal exports of petroleum and petroleum products from New York during the last three weeks (figures in gallons unless otherwise noted in parenthesis):

	Week Ended—		
	April 14	April 7	March 31
Gasoline—			
Bulk	306,175	3,606,000	6,156,867
Barrels	150,700	.....	.....
Cases	1,445,490	2,127,590	2,209,060
Kerosene—			
Bulk	2,908,783	1,986,195	306,195
Cases	1,664,400	4,263,780	3,655,500
Gas oil—			
Bulk	369,889	.....	154,996
Fuel oil—			
Bulk	.....	1,088,627	.....
Lubricating oil—			
Bulk	215,000	247,753	745,647
Barrels	1,638,750	2,163,750	1,509,400
Cases	127,460	351,080	273,230
Lubricating grease—			
Barrels (lbs.)	225,000	423,350	.....
Paraffin wax—			
Bags (lbs.)	1,212,200	1,452,000	1,199,220
Barrels (lbs.)	472,200	.....	204,250
Petroleum Asphalt—			
Barrels (lbs.)	2,567,250	2,246,850	1,863,900
Crude oil—			
Bulk	.....	.....	735,928
Barrels	147,500	.....	246,400

The foregoing figures do not include shipments of less than 500 bbls. or 1,000 cases.

Tanker Charters

Tanker Winifred (Am.) 1,520 tons net, Gulf to Cuba, April loading.

Tanker Derbyline (Am.) 4,349 tons net, Gulf to north of Hatteras, 30 cents, May loading.

Tanker Sunik (Fr.) 6,500 tons net, Gulf to United Kingdom-Continent, clean oil, 27s 6d., May-June loading.

Tanker Sun (Am.) 2,926 tons net, clean oil, Gulf to north of Hatteras, 32 cents, April loading.

Oil Receipts Gain

Receipts of crude and refined oil by water at Atlantic Coast ports during the week ended April 14 are estimated at 4,111,000 bbls., a daily average of 587,000 bbls., compared with 3,208,000 bbls., a daily average of 458,000 bbls., the preceding week.

Receipts from the Gulf Coast were 2,452,000 bbls., a daily average of 350,000 bbls. This compares with 1,897,000 bbls., a daily average of 271,000, the week ended April 7.

Receipts of California oil for the week ended April 14 amounted to 556,000 bbls., a daily average of 79,000 bbls., against 473,000 bbls., of 68,000 bbls. daily, the week before.

Imports are estimated at 1,103,000 bbls., or 158,000 bbls. daily., against 838,000 bbls., a daily average of 120,000, the week ended April 7.

Of the imports for the week ended April 14, 910,000 bbls., or a daily average of 130,000 bbls., came from Mexico, and 193,000 bbls., or 28,000 bbls. daily, from South America.

The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic Coast ports from the Gulf and Pacific Coasts of the United States, and imports, for the last three weeks; also monthly record for the last 12 months, (figures in barrels):

	Week Ended—		
	Apr. 14	Apr. 7	Mar. 31
Gulf Coast	350,000	271,000	365,000
Pacific Coast	79,000	68,000	122,000
Imports	158,000	120,000	137,000
Total	587,000	459,000	624,000

Daily Averages By Months				
1926:	Gulf	Pacific	Impts.	Total
March	317,000	97,000	178,000	592,000
February	332,000	73,000	122,000	527,000
January	279,000	59,000	96,000	434,000
1925:				
December	298,000	56,000	103,000	457,000
November	259,000	36,000	92,000	387,000
October	249,000	36,000	102,000	387,000
September	306,000	66,000	76,000	448,000
August	291,000	54,000	90,000	435,000
July	391,000	63,000	107,000	561,000
June	379,000	66,000	118,000	563,000
May	312,000	81,000	145,000	538,000
April	353,000	78,000	101,000	532,000

The foregoing estimates are based on the carrying capacity of incoming oil-laden tankers.

GENERATION OF STEAM AT THE REFINERIES

(Continued from Page 134)

steam of a particular pressure is always of a definite volume and temperature, either one of the three is a function of the other two. Change the pressure of the steam by irregular firing routine, and its volume and temperature changes. Consider the resulting effect on the filters, if you please.

We now come to another very important fact in our boiler operation. Our highest rate of heat transfer from the fire to the water, through the medium of the metal in our boilers, can only occur when both sides of the boiler are absolutely clean. That is to say, the outside and inside, or the fire side and the water side.

Just a few more simple figures by way of illustration. Take again our 100-horsepower boiler. We will assume that it is 20 feet in length. Such being the case, there will be a total length of 40 feet of metal that the hot gases must travel over before they reach the flue. For the gases first pass a r o u n d or under the boilers' shell to the rear, then back again to the front of the boiler through the flues, then rising to the smoke up-take and out t h r o u g h the breeching to the stack. The temperature of our furnace, we will say, is 2,000 degrees Fahrenheit. (It should be 400 or 500 degrees hotter than this for best economy). However, we will consider the 2,000-degree temperature. If the pressure of the steam is 100 pounds gauge in the boiler the temperature of this team will be about 338 degrees Fahrenheit. Dependent upon the rate at which we run our coal, and if we are operating economically, we would not expect that the gases from our fires would be over 220 degrees Fahrenheit higher than the steam temperature when they pass out of the boiler. This would mean then, that the final temperatures of the gases would not be over 338 plus 220, or 558 degrees—say 560 degrees.

Now our gases travel through the boiler at a certain velocity and I shall assume that this velocity is 1,200 feet per minute, or 20 feet per second. (This, by the way, is low).

Remember, I said there was a total gas travel of 40 feet in our boiler. Such being the case, our gases at a velocity of 20 feet per second will pass over the 40 feet of surface length in just two seconds, and in that short interval of time, they must give up 1,440 degrees of their temperature. For I told you that the furnace temperature was 2,000 degrees and the final temperature of the escaping gas was 560 degrees, thus a temperature difference of 1,440 degrees must occur in two seconds of time. Rather startling, isn't it? And wouldn't you also consider it a mighty rapid rate of heat transfer? To make this a bit more startling, I want to tell you just one additional fact in this connection. We admit the air to our fires at a temperature somewhere near that of the atmosphere. Naturally the colder the day, the colder the air. Let us assume that we admit the air at a temperature of 50 degrees. The very instant it enters the furnace and combines with the carbon, its temperature has been raised to the 2,000 degrees, or more, previously mentioned. Therefore, in this short interval of two seconds or less, we have raised the temperature of the air from 50 to 2,000 degrees and then absorbed 1,500 or more degrees from it and passed it out to the open air again.

How to Lose Heat

We must understand from what I have said, how very important it is that all of the boiler surfaces are clean, so that the boiler may properly absorb the heat. But I find that the proper method in the average refinery is reversed. Instead of cleaning out heat absorbing surfaces and insulating our heat transmission surfaces, we reverse the order and insulate the absorption surface with scale and soot and permit the steam lines to remain uncovered. Such conditions mean that we lose at both ends of the coal pile.

Another place we lose large quantities of fuel is through cracks in the boiler walls, warped and ill-fitting doors, etc. Tremendous volumes of air continually pour in the boilers, diluting the gases and actually abstracting heat from the surfaces. Another bad effect from this source, is that the stack is compelled to handle unnecessarily large volumes of excess air to the detriment of the boiler draft.

There are a number of other losses that are of r e g u l a r occurrence in the average refinery boiler room, such as loss of carbon in the ash, leaking joints, uncovered steam pipes, condensate losses, etc., that would require hours upon hours to analyze, but my time is limited and I am, therefore, only able to hit a few of the high spots.

Science has given us our knowledge of the generation of steam and its application to our varied industries through the medium of the laboratory. Obviously, such delicacy of measurement, and refinement of calculation could not be applied to our boiler rooms.

I might, in a somewhat general way, have given you this talk from an entirely scientific side, and when I had finished you would not have understood what I had been talking about, any more than you can understand why a red cow that eats green grass gives white milk, or why a blackberry is red when it is green.

Results Obtained

Data of unestimatable value have been obtained in the eight months that this work has been under way. Heavy losses and the expenditure of unnecessary money has been abated in a number of cases, without the expenditure of a single copper for additional equipment. Possible savings of over $200,000 per annum to some 15 refineries have been indicated.

We now know that your losses are definite and real; we also know that they can be abated and profit obtained, where loss has prevailed. We have also determined in our own minds how this may be accomplished in an economical and practical manner. It would be a poor physician, indeed, who c o u l d diagnose your ailment and not be able to prescribe a cure. It is also a poor patient who refuses to take this medicine.

I have spent many hours in your boiler rooms, actually working with and instructing your firemen; talking to them in terms they could understand and instructing them in the principles of combustion. I have also burned a lot of the midnight oil (figuratively speaking), in an effort to devise some sensible way in which to co-ordinate the complexities of your different power plants so that a uniform method of operation might be applicable to all alike.

"Cost cutting," is the slogan of successful business today. Men, as never before, are devoting time and money in unlimited measure to d e f e a t uneconomic waste that has heretofore prevailed, not only that money may be saved, but also that posterity may not be called upon to pay the penalty of our neglect, and damn us for needlessly wasting the heritage to which they are justly entitled.

Do not get the idea that I am a visionary, or an altruist. I assure large savings are possible in your plant. This statement is based upon what we have absolutely accomplished in the past, and is a matter of record in thousands of cases all over the land today.

AUTOS IN MEXICO CITY RAPIDLY INCREASING

WASHINGTON, D. C., Apr. 17.—Official data from Mexico show that there are in the Federal District of Mexico alone 15,781 automotive v e h i c l e s, of which 10,787 are solely for personal use; there are 2,049 "camiones," or passenger buses, charging fares and carrying daily 592,536 persons. In addition there are 2,145 freight-carrying trucks. The total value is placed at nearly $36,000,000 Mex.

A tax of 10 per cent on all sales of automobiles and tires has been levied by the Federal Government for the purpose of assisting in the construction and betterment of roads throughout the Republic, with especial design to promote auto traffic. It is expected to yield over 2,000,000 pesos annually, while the gasoline tax, also devoted solely to the purposes indicated, produces a much larger amount.

During January, 118 carloads of autos were imported from the United States, while for the year 1925, the total importations of motor vehicles were 12,560 automobiles and 3,585 trucks.

Kerosene Consumption Fluctuations

Wide Variation in Certain Areas With Greatest Demand in Agricultural States. Bears Little Relation to Gasoline Requirements

By C. O. Willson

Unlike gasoline and fuel oil, the other main products of crude petroleum, there has in the past been little accurate data on which to base conclusions in regard to kerosene demand. In the case of gasoline, refiners and distributors have a reasonably accurate check on demand through automobile registrations. It is also definitely known that the demand varies with the seasons, the maximum consumption coming in the summer months. In regard to fuel oil the sources of demand are known and also the effect of the seasons on consumption.

The kerosene situation is more difficult, due primarily to the fact that unlike gasoline and fuel oil it has more than one important use. Kerosene is used as light, heat and motor power. These demands, unfortunately or otherwise, are not uniform throughout the United States. The seasonal fluctuations also vary. That is, in some sections kerosene is never in demand for heat while in others there is relatively little utilization for light or fuel for internal combustion engines. In some sections the demand for a particular use is practically steady throughout the year while in other areas the demand fluctuates with the seasons.

In this muddled situation one market factor partially or wholly offsets another. It has often happened that refiners acquainted with developments in their own marketing territory have believed that the supply was not as great as the demand. After advancing their prices, however, they found that their situation was only local and general conditions brought lower rather than higher prices.

State Reports

A possible solution to this problem is offered those who care to study the monthly reports now available from several states covering kerosene consumption. These data are based on reports made by companies for taxation and accurately reflect actual consumption within the states.

The conclusions of this article are based on 13 state reports compiled by the American Petroleum Institute giving kerosene consumption by months for 1924 and 1925. It will be noted that these states are sufficiently scattered so that considered as a whole the reports are representative for the entire area east of the Rocky Mountains. The names of these states are given in Table 2.

Kerosene by Quarters

Table 1 shows the percentage of kerosene shipped each quarter of 1925 for the entire territory east of the Rocky Mountains, and also for three districts. For the purpose of comparison the percentage of kerosene shipped each month based on the report of the Bureau of Mines is also given.

The first situation shown in the table lies in the comparison of the Bureau of Mines' report covering shipments and state reports for the area east of the Rocky Mountains. Many have assumed the fluctuations in the kerosene shipments of the Government reports reflected changes in actual consumption of kerosene. The table shows that such is not the case.

Kerosene shipments from refineries are affected by several factors other than the requirements of consumers. Current prices, availability of clean cars in excess of requirements for gasoline shipments, and changes in plant operation are among the factors which determine the kerosene movement from refineries. This often results in the storage of kerosene at bulk stations for a time in excess of current requirements and withdrawal from storage during other periods of the year.

VARIATIONS IN KEROSENE DEMAND

Kerosene domestic consumption, considered for the entire country, shows relatively little fluctuation throughout the year. In certain areas, however, the demand changes with the seasons, the maximum consuming periods varying in different parts of the country.

Gasoline requirements per capita are not an accurate gauge of kerosene consumption. In some states both gasoline and kerosene consumption per capita is high but in other states where gasoline demands are greatest the kerosene consumption is relatively low.

The kerosene demand per capita is greatest in the states where agricultural pursuits are carried on with large ranches or plantations in which there is a widespread use of tractor power.

The greatest increase in kerosene consumption comes from the states of the northwest. In a few states the kerosene demand is decreasing.

Table 1, 1925

*Percentages of kerosene consumed based on state reports and kerosene shipped based on Bureau of Mines report:

	East of Rocky Mts.	Middle West	South-west	South	Bu. of Mines
First quarter	23.2%	20.2%	24.9%	26.8%	22.2%
Second quarter	25.1	26.6	25.5	21.0	22.2
Third quarter	26.4	28.8	27.6	20.5	28.3
Fourth quarter	25.1	24.2	21.6	31.5	27.2

*Percentages for the area east of the Rocky Mountains are based on the reports for the 13 states. The Middle West includes Michigan, Colorado, Minnesota, Nebraska, North Dakota and South Dakota. The Southwest is based on reports from Oklahoma, Kansas and Arkansas and the South of Florida, Georgia, Louisiana and South Carolina.

The percentage figures given in the first column show that for the entire area east of the Rocky Mountains the kerosene consumption fluctuated relatively little. In this area, however, there were rather wide fluctuations in the groups termed "Middle West" and the "South." The consumption was fairly steady in the southwest.

It will be seen that in the middle west the greatest consumption came in the second and third quarters. The monthly report for these areas show the greatest consumption was early in the second quarter (March and April) and late in the second quarter (August and September).

Situation in South

In the south, the opposite situation obtained. In that area, the maximum kerosene consumption came in the first and last quarters. Although not so apparent as in the middle west the kerosene requirements of the southwest were greatest in the second and third quarters. This variance in the several sections explains why for the entire area of the Rocky Mountains there are no wide fluctuations in kerosene consumption.

The change in demand in certain sections is great enough so that it is ordinarily reflected in the price. In the Mid-Continent, which is dependent on the southwest and middle west to consume its kerosene, the heavy demand of the fall and spring months is invariably reflected in higher prices.

Kerosene and Gasoline

Those attempting to determine their kerosene requirements in the distributing end have sometimes asked whether or not it is possible to make an estimate based on population or gasoline requirements. This is done in the case of lubricating oils with reasonably accurate results. The following table shows, however, that other information is needed before any estimate of kerosene consumption can be made from gasoline or census data.

Table No. 2—1925

Showing per capita consumption of kerosene and the relation of kerosene and gasoline consumption.

States—	Kero. Per Cap. gas.	Gaso. Per Cap. gals.	Ratio Gas to Kero. Consum.
South Dakota	27.7	112.79	4.1
North Dakota	27.4	96.68	3.5
Kansas	27.1	111.23	4.3
Florida	23.5	193.04	8.1
Minnesota	22.5	95.95	4.2
Nebraska	21.6	104.44	4.8
Louisiana	16.4	63.08	3.1
Oklahoma	14.5	81.64	5.6
Michigan	13.9	105.21	8.0
Arkansas	9.6	45.08	4.7
Colorado	9.1	96.87	10.6
S. Carolina	8.5	47.21	5.5
Georgia	7.1	47.76	6.6

The ideal situation from the standpoint of the distributor would be a thickly populated area in which was a high per capita consumption of both gasoline and kerosene. During the hectic periods of the past two or three years in gasoline markets when margins for marketing were often reduced below the minimum for profitable operation, distributors, profits have sometimes been saved by a large kerosene demand.

It is obvious from Table 2 that the ideal situation just mentioned, however, never exists. Gasoline consumption per capita runs high in some of the thickly settled states of the east but the kerosene demand in those areas is relatively low.

Both the gasoline and kerosene demand is relatively high per capita in both South Dakota and North Dakota. However, from the standpoint of marketing, this situation loses its importance when the fact that this population is scattered over wide areas is considered. The same situation will be found in other agricultural states.

Michigan, with a gasoline consumption of 105.21 gallons per capita, is an excellent area from the standpoint of gasoline distribution. However, the kerosene requirements of 13.9 gallons per capita is low. The same situation applies in Ohio, Pennsylvania, New York and other thickly populated areas.

Less Kerosene in East

The explanation lies in the fact that in the densely populated states there is less demand for kerosene in any of its uses. Electricity is available for lighting and the use is limited for power or heat in those states.

The conclusion to be drawn from the table is that kerosene consumption is greatest in the agricultural states where tractor power is widely used. This applies to North Dakota, South Dakota, Minnesota and other states of the northwest where farming is carried on with large ranches and tractors are used throughout the farming season.

The same situation is found in parts of the south where the large plantations are common. There the tractors are coming more and more into use as shown by the fact that Louisiana consumes more kerosene per capita than any of the 13 states given in Table 2. In both the northwest and south, there is still a large demand for kerosene as light.

Table 3

Kerosene consumption for 13 states east of the Rocky Mountains for 1925 and 1924:

States—	Kerosene Consumed— 1925	1924
Michigan	57,890,000	57,179,000
Minnesota	57,538,000	49,979,000
Nebraska	29,230,000	26,679,000
North Dakota	18,831,000	15,602,000
Colorado	9,317,000	9,638,000
South Dakota	18,473,000	16,958,000
Kansas	49,115,000	49,497,000
Oklahoma	32,617,000	31,727,000
Arkansas	17,917,000	16,704,000
Florida	25,648,000	20,218,000
Georgia	21,950,000	23,149,000
Louisiana	30,800,000	30,650,000
South Carolina	15,192,000	16,390,000

The greatest increase in demand is also coming from the states of the northwest and parts of the south. These increases more than offset the declines in other parts of the country so that the total consumption in the United States continues to show a steady climb. Of the 13 states given in Table 3, Colorado, Kansas, Georgia and South Carolina consumed less kerosene in 1925 than in 1924.

The final column in Table 2 points to the situation in which distributors are primarily interested. A concern which is considering entering a state with a string of filling stations can easily find out what the ratio of its gasoline and kerosene sales will be by obtaining the total consumption of the two products for one year.

This ratio of kerosene to gasoline will often be the factor which will determine whether or not the marketing facilities can be operated profitably. With a 3.1:1 ratio in Louisiana, conditions in regard to kerosene marketing are of great importance. The same is true in the northwest where kerosene demand bears a relatively high ratio. In Colorado, where farming is carried on for the most part agricultural pursuits are largely confined to small irrigated farms and the amount of kerosene distributed is small in comparison to gasoline.

RUSSIAN PRODUCTION FOR FIRST QUARTER

WASHINGTON, D. C., Apr. 17.—Oil production in the Soviet Union for the first quarter of the current Soviet fiscal year, October 1 to January 1, was 1,903,800 metric tons, compared with 1,681,449 tons for the same period last year, an increase of 13.2 per cent, according to a bulletin received by the Russian Information Bureau. Drillings in Baku and Grozny were 46,061 meters, compared with 30,943 meters, an increase of nearly 50 per cent. Figures for refining at Baku and Grozny aggregated 1,589,800 tons.

The quarter, it is reported, was marked by an increase in the pumping output in Baku, while the bailing and gusher output decreased from the previous quarter. The gusher output in the Grozny fields increased to 69.3 per cent of the total, compared with 59.4 per cent in the preceding quarter. In the Baku refineries the production of gasoline increased 50 per cent over the preceding quarter.

METHANOL IMPORTS GAIN

Imports of methanol in 1925 total 508,409 gallons against only 43 gallons in 1924. Butyl alcohol imports were 2,152,091 pounds against 404,882 pounds in 1924.

ADEQUATE REFINING CAPACITY NEEDED

(Continued from Page 138)

erated. The kerosene shortage could be supplied by these refineries, but as it will be necessary to operate some of the skimming plants this amount could be most readily furnished by them.

What Table 1 Shows

Table No. 1 shows that to supply the motor fuel and kerosene demands, about 73 per cent of the capacity of the plain skimming and topping plants will have to be operated, if operating on selected crudes yielding 30 per cent natural gasoline. By running about 123,000,000 bbls. of 30 per cent gasoline crude in such plants, the necessary motor fuel and kerosene can be obtained.

The combined refinery operations above indicated call for 752,000,000 bbls. of crude oil per year, or about 17,000,000 bbls. more than the new crude, refinable by present methods, available in 1925. The indicated shortage will result in changes in price structure and withdrawals from stocks of crude and motor fuel. Price structure changes may temporarily encourage operations of additional skimming plants.

It is the spasmodic and irrational operations of the smaller skimming plants that has resulted in overproduction of finished products and in serious disturbances in the industry. Insofar as the laws of supply and demand will permit, no encouragement can be expected from the larger operators toward any change in the price structure which will warrant such operations. Of the skimming plant capacity in excess of the cracking (Group A), the major refining concerns own or control about 40 per cent.

While no great increase in cracking capacity can be expected this year, it is to be noted, as shown in last column of Table No. 1, that if full cracking plant capacity is installed by the addition of 212,000 bbls. capacity (about 22 per cent increase of present cracking capacity) about 40 per cent of the capacity of skimming plants not now so equipped is required to provide the motor fuel and kerosene apparently needed.

Shown by Table 2

Table No. 2 shows the same data as applied to 1930, using the motor fuel estimate of the Committee of Thirteen, A. P. I., as a starting point. If the present estimates of highly competent and well-informed statisticians in this industry are correct, the conditions indicated for 1930 may be met within the next year or two.

This table shows that it would require about 187 per cent of the skimming plant capacity in operation January 1, 1926, to meet the motor fuel demand. If all these plants were improved by the installation of full cracking capacity, their motor fuel output would just about equal the demand.

These figures, however, encounter the probable crude limitation. If only 735,000,000 bbls. of new refinable crude are available as in 1925, the maximum amount available for skimming or added cracking is only 106,000,000 bbls. This would permit the operation of only 64 per cent of the skimming plant capacity operating January 1, 1926, whereas 187 per cent is required. Such an amount of crude oil, if run for 60 per cent gasoline production, would permit operation of 68 per cent of the capacity of these skimming plants and leave a shortage of about 29,000,000 bbls. of motor fuel per year. Any shortage of this kind will be met by increased cracking at the more complete refineries at the expense of the available supply of fresh gas and fuel oil, lubricating stocks and waxes. To do this, however, these refineries require the same added cracking capacity as is needed in the minor plants.

As stated above, such figures are in no ways accurate. They indicate strongly, however, the opportunity for refineries in the United States which are placed on an efficient basis. There is no reason why the majority cannot be so placed so far as knowledge and available equipment are concerned. The entire crude capacity of the refineries included in Group B is absorbed in the output above indicated. If the skimming plants are not equipped to meet the demands, or if refineries included in Group B are not made and kept efficient, the necessary facilities will be added to the other refineries.

Needed Capacity

There is now needed skimming plant capacity of 396,000 bbls. per day. If such plants could be improved by full cracking capacity, a crude capacity of 212,000 bbls. per day is needed now. The available crude supply will apparently limit the usable future capacity to about 365,000 bbls. per day with full cracking capacity. If so improved, there will be conserved a present investment of about $40,000,000, a large part of which if not made fully effective will be duplicated very soon, and an early replacement of about $30,000,000 more, if existing plants are not brought up to date. Needless to say, it is not possible to save all of this investment because of lack of crude, faulty location, condition of plants or other controlling reasons. A large part of it can and should be saved and used as a basis for reorganization of existing properties. Such reorganization plans must include a definite arrangement for crude supply.

In connection with the gas and fuel oil supply and demand, there is a large element of uncertainty. If all the refineries of the United States were equipped for maximum gasoline production, there would be no fresh gas oil or fuel oil available from refinery operations. The tables show the supplies that might be available under different conditions. It is difficult to say how great the future need for such commodities may be. It will be largely affected by the price. The conditions vary greatly in different parts of the country. A large amount of the imported oil and a considerable portion of the domestic crude is not readily refinable with present methods, and in 1925 about 57,000,000 bbls. of crude was burned as fuel. How soon any appreciable part of this heavy oil will be refined is now uncertain, but it is probable that ways will be developed as the need becomes urgent.

The market for special high grade commodities such as can be most advantageously produced by Pennsylvania refineries can and will be supplied by the most efficient concerns. The future of the Pennsylvania refineries can only be protected by their being placed and maintained on a basis of the highest efficiency and economy. There is ample indication of a growing demand for all of their refined products. As the shortage of motor fuel develops, the value of available cracking stock will increase. This will result in increased values for lubricants independent of any increase in the demand for such products.

ROCKY MOUNTAINS

(Continued from Page 52)

a deep well in the Hudson Field the coming summer. This field is a black oil production, in Fremont County, about 7 miles east of Lander. Two horizons produce oil, one about 900 feet and the other around 2,800 feet. The proposed well is to make a test of sand below the Tensleep, which is the lower sand at Hudson.

The gas well on the Little Grass Creek Dome, Hot Springs County, Big Horn Basin, is now making water. Last week this well was reported as making some oil, but the water appears to prove the hole located well down the structure.

Lance Creek

A report published by the Bureau of Mines, made by Petroleum Engineer K. B. Knowles and E. G. Dewees, assistant, states that the Lance Creek Field in Niobrara County, Wyoming, is in serious danger of being flooded by water. The report further states that if the operating companies were to start a concerted campaign the danger can be eliminated to a great degree and the life of the field prolonged.

The Illinois Pipe Line Co. is preparing to renovate the pipe line from the Elk Basin Field to Greybull, some of the joints having been found to be badly pitted where the alkali has eaten into the steel. The whole line will be tested and examined at intervals and repairs made where needed.

On May 7, the Colorado Public Utilities Commission will hold hearings on the matter of laying pipe lines from the Fort Collins Field to points outside the State. It appears that several of the towns in northeastern Colorado have voiced objection to the carrying of the Fort Collins gas to Cheyenne while these towns are without a supply of this fuel. The Union Oil Co. of California is unloading material for the gasoline plant at Fort Collins.

The Golden Eagle Dome carbon plant is for sale. This plant was placed on the Golden Eagle Dome, about 20 miles northwest of Thermopolis, three years ago at great expense. After a short run the gas supply commenced to fail and the plant was sold at sheriff's sale recently. The plant has 20 burner houses, a packing house and numerous other buildings. Owing to the carbon black law that prohibits the manufacture of carbon black in Wyoming under certain conditions tending to conserve the natural gas resources of the State, the use of natural gas in the State cannot be had for the manufacture of carbon black within 10 miles of an incorporated town.

Runs From the Field

Salt Creek	55,190
Teapot	1,340
Big Muddy	3,390
Grass Creek	2,820
Elk Basin	620
Greybull	15
Rock River	2,940
Lance Creek	2,060
LaBarge	200
Poison Spider	380
Osage	350
Hamilton Dome	1,290
Lander	270
Byron	30
Lost Soldier	4,200
Simpson Ridge	230
Ferris	40
Cat Creek	2,970
Sunburst	19,800
Lake Basin	170
Florence	400
Moffat	2,850
Tow Creek	110
Fort Collins	2,580
Iles Dome	55
Boulder	25
Rangeley	100
Hogback	460
Rattlesnake	570
Artesia	3,000
Total	108,485

Field Runs for the Month of March

Salt Creek	1,594,210
Teapot	42,120
Big Muddy	103,270
Grass Creek	83,480
Elk Basin	19,030
Greybull	450
LaBarge	7,400
Rock River	92,540
Lance Creek	73,110
Poison Spider	9,340
Osage	10,500
Hamilton Dome	35,910
Lander	7,320
Byron	705
Lost Soldier	126,490
Ferris	1,330
Simpson Ridge	7,140
Cat Creek	87,160
Sunburst	524,120
Lake Basin	4,740
Florence	12,000
Moffat	104,835
Iles Dome	3,035
Fort Collins	74,695
Boulder	750
Rangeley	3,000
Tow Creek	3,195
Hogback	14,770
Rattlesnake	10,875
Artesia	90,200
Miscellaneous	8,530

NORTH TEXAS MARKET SITUATION ABOUT SAME

FORT WORTH, Tex., Apr. 17.—There was very little change in the north Texas market situation during the past week.

The U. S. Motor price was practically the same as one week ago, with the exception of a few scattered instances where quotations of 10½ cents were made. There is no record of sales being made at this figure. The prevailing price for this product was from 10 to 10¼ cents.

The strongest points were fuel oil and kerosene, which continued to hold their price, with a very limited amount of either available, particularly fuel oil. Kerosene displayed added strength in the spread of prices, taking an additional ⅛-cent for the top making it 7¼ cents.

The export market continued to be very sluggish, with no evidences of any change in the immediate future. There have been several reports of inquiries being made for the 56-58 450 end point product, but these inquiries have not materialized into purchases of any consequence.

At the end of the week improved weather conditions indicate spring rains have had their day, and the touring season may be considered installed.

NATURAL GASOLINE WEAK IN CALIFORNIA

LOS ANGELES, Calif., Apr. 17.—The natural gasoline market in California has weakened somewhat since the last increase in the price of U. S. Motor. While before the increase, natural gasoline was selling at from 1 to 1½ cents below the service station price, some sales have been reported as low as 3 cents under.

There are several factors responsible. The larger refining and marketing companies have been purchasing natural gasoline in large volumes during the past few months. Now that the winter has passed less natural gasoline is needed to sweeten the refinery product and the big marketers find themselves fairly well stocked. The expected increased consumption of gasoline has not yet made itself felt. Consequently, the demand for natural gasoline is not as heavy.

At the same time, the price of this commodity has increased to the point where the large refiners can buy Oklahoma and north Texas natural gasoline and bring it to California at a less cost to them than if they bought California natural gasoline. This is what has actually happened and the result has been that the top price of natural gasoline in California is controlled to a certain extent by the present cost of Oklahoma and north Texas natural gasoline delivered at California refineries.

The recent heavy storms in California crippled automobile travel to such an extent that local gasoline sales fell far below normal.

Shipments of California oil to the East Coast for the week ended April 3, showed a total of 627,000 bbls. against 743,000 bbls. during the preceding week. This is an average daily decrease of 16,572 bbls. Following are the shipments from Los Angeles Harbor during January, February and March, 1926:

Pacific Domestic

	Bbls.
Crude	2,106,578
Fuel	1,266,927
Gasoline	525,467
Kerosene	9,825
Distillate	2,447
Diesel	34,551
Tops	72,000
Total	4,020,795

Pacific Foreign

Crude	84,000
Fuel	869,919
Gasoline	141,000
Kerosene	153,024
Diesel	28,087
Total	1,276,930

Atlantic Domestic

Crude	1,138,883
Fuel	644,764
Gasoline	669,149
Diesel	71,198
Tops	164,379
Total	2,688,073

Atlantic Foreign

Crude	109,126
Fuel	284,959
Gasoline	145,394
Total	539,479

TEXAS PIPE LINE CO.

HOUSTON, Tex., Apr. 19.—The Texas Pipe Line Co., subsidiary of The Texas Company, has been granted a permit to increase its capital stock from $14,000,000 to $20,000,000. The increase has been divided into 50,000 shares of a par value of $100 and has been subscribed in cash. The directors are B. E. Hull, Ira McFarland, A. M. Donoghue, J. L. Dowling and Robert A. John, Mr. Hull being president.

VISITING MID-CONTINENT

Charles E. Bascom, secretary and treasurer of the Broderick & Bascom Rope Co. of St. Louis, is visiting the Mid-Continent oil fields.

REFINING AND MARKETING

REPORTS OF PURCHASE OF HAWKEYE STATIONS

Jacob France, president of the Mid-Continent Petroleum Corp. (Cosden & Co.), on Tuesday refused to affirm or deny current reports stating that the company had taken an option on the properties of the Hawkeye Oil Co. of Waterloo, Iowa. Mr. France said he was unable to make any statement at this time.

The Mid-Continent Petroleum Corp., which operates the largest refinery in the Mid-Continent Field, at the present time has no retail distributing facilities, depending entirely on sales in tank car lots. It has been reported for some time that the company would shortly build or purchase a chain of bulk and retail stations to handle a part of the refinery output.

The Hawkeye Oil Co. is one of the largest independent distributors in the middle west with bulk and service stations in several states. A. H. Caward, who died recently, founded the company which is now owned by his estate. The company for a time was owned by the Producers & Refiners Corp. Controlling interest was again purchased by the Caward interests last year.

George Locke, vice president of Barnsdall Refineries, Inc., denied in Tulsa Tuesday that his company was negotiating for the Hawkeye properties. This report was based on a supposed conference of officials of the two companies last week.

TRAFFIC SYMPOSIUM AT GASOLINE MEETING

Arrangements were completed Tuesday for a conference of Mid-Continent traffic men to be held in conjunction with the annual convention of the Association of Natural Gasoline Manufacturers, May 5 and 6, it was announced by A. V. Bourque, secretary of the association.

The conference will open at 10:30 o'clock on the first day of the convention with A. F. Winn, traffic manager of the Skelly Oil Co. and chairman of the traffic committee of the Association of Natural Gasoline Manufacturers, presiding.

While sponsored by the association, the session is intended for all traffic men whether connected with refining or gasoline companies. The program as arranged by the association will be in the form of an open forum discussion.

Among topics on the docket will be: "Calibration of Tank Cars", "Loading of Natural Gasoline in Reference to Proper Outages", "Inflammable Regulations", Penalty Storage Charges on Inflammables Stored in Private Cars on Private Tracks", "Placarding of Tank Cars", "Railroad Tank Car Repair Bills", "The Freight Rate Situation", "Tank Car Vapor Saving Devices", "Freight on Outages", "Mileage Equalization Rules and Rates; Establishment of Uniform Methods of Obtaining Mileage; Reports of Carriers on Privately Owned Equipment; Readjustment of Present Methods of Carriers in Dividing Mileage Earnings on Privately Owned Equipment When Movement Is Begun on One Line the Last Two or Three Days of One Month and Is Extended Into the Subsequent Month for Completion," "Report of the Interstate Commerce Commission Hearing on April 19."

McKEAN COUNTY PLANT

BRADFORD, Pa., Apr. 17.—Enlargement of the McKean County Refining Co.'s plant at Farmers Valley, Pa., to enable the manufacturer of lubricating oils is being planned by officials of the organization. The erection of a separate building for this department is being considered.

WISCONSIN WOULD LIMIT DISCOUNT TO QUANTITY SALES WITHIN ONE CITY

MADISON, Wis., Apr. 19.—Recommendations were made by the State Commissioner of Markets at a hearing here April 13 and 14 that the making of contracts by oil companies which call for discounts on total quantities of motor fuel sold at more than one city be discontinued and that contracts already made be not renewed.

No definite order to this effect was issued by the commissioner but if at the end of a 90-day period granted the industry to comply with the recommendations voluntarily no satisfactory arrangements have been made the order will be made. However, Herman L. Ekern, attorney general, and the commissioner expressed the opinion that all companies would acquiesce.

Recommendations

It also was recommended at the hearing that the commissioner of markets immediately issue the proposed amendment to Order No. 23 omitting from the proposed amendment the requirement for posting prices on tank wagons. This amendment, which was issued, will be effective June 1, 1926.

The hearing, which was informal and confined entirely to state officials and their assistants and to representatives of oil companies, brought a peaceful and satisfactory ending to a complaint of Wisconsin independent jobbers against larger companies giving inter-city discounts on quantity purchases of motor fuels.

Under the new plan, companies buying gasoline in a large number of cities in Wisconsin will not be able to combine all these purchases on one quantity discount contract but, on the other hand, the contracts will apply only to gasoline bought at one city. This eliminates to a large extent the advantage which large companies having stations in all parts of the State have had over smaller firms operating in only one community.

The entire matter being confined to Wisconsin has no bearing on conditions in other States.

The statement of the attorney general at the hearing on the proposed order relating to trade practices in the sale of gasoline follows:

Attorney General's Statement

"In an attempt to secure fair trade practices in the marketing of gasoline, an order was made by the Commissioner of Markets on April 13, 1925, effective May 4, 1925, requiring that the prices at which gasoline is to be sold in the State of Wisconsin shall be publicly posted and that no gasoline shall be sold at other than the publicly posted prices.

"About July 1, 1925, a number of the larger oil companies put into effect a form of contract under which a quantity discount was given for the purchase of gasoline at a service station during any calendar month in excess of 200 gallons, increasing to a maximum discount of 2 cents per gallon for monthly purchases in excess of 600 gallons. A like quantity discount was given for purchases from tank wagons during any month in excess of 750 gallons, this discount being increased to a maximum of 2 cents per gallon for purchases in excess of 10,000 gallons in any one month.

"These discounts are allowed not alone for purchases at any one town but for purchases at any place within the territory throughout which the oil company does business. This combining of purchases in different towns has caused objections to this practice to be brought to the attention of the Commissioner of Markets because of the substantial advantage given to the large companies as against the smaller dealers, and because of the difficulty of posting a local price under such contracts.

"Notices were therefore given of hearings on a proposed order to prohibit the combining of purchases at different places for the purpose of granting a discount, and also of a proposed amendment to General Order No. 23 as to the manner of posting prices.

"At the conclusion of hearings at Madison on March 30, it was suggested that an informal conference of the oil companies be held and that all companies having intercity contracts, or being in a position to make intercity contracts be invited to such conference.

"Such conference was accordingly called by the Commissioner of Markets and the Attorney General and held on April 13, 1926, at Madison, resulting in a full discussion of the proposed order and the proposed amendment.

"Summarizing the discussion it was proposed by the Attorney General that all of the oil companies, which have totaled the quantities purchased in different towns by one customer as the basis

(Continued on Page 156)

FLORIDA AND MICHIGAN LEADING IN GASOLINE GAIN DURING FEBRUARY

Gasoline consumption is increasing more rapidly in Florida than in any other State based on gasoline tax reports compiled by the American Petroleum Institute from 33 States. According to the February tax report 25,913,000 gallons of gasoline were sold in Florida during the 28 days. This represents 89.1 per cent increase over February of last year.

Michigan was second in percentage of gain for the States covered in the report. February consumption was 46.4 per cent greater than during the same month last year. Kansas, Indiana, Wyoming and New Mexico were the only States which showed decreases.

For the 33 States there was a total increase in February of 46,802,000 gallons or 19.8 per cent over February, 1925. The consumption the first two months of this year was 20.2 per cent over the same period last year. Based on daily averages February consumption this year was 4.8 per cent greater than in January.

The following table gives the gasoline consumption by States for February, 1926:

States—	Month of Jan. 1926	Feb. 1926	Feb. 1925
Alabama	5,416,000	5,519,000	6,726,000
Arizona	2,261,000	2,379,000	2,103,000
Arkansas	7,927,000	6,755,000	5,403,000
Colorado	6,550,000	6,536,000	6,352,000
Conneticut	7,402,000	5,853,000	5,466,000
Delaware	680,000	1,542,000	1,050,000
Florida	26,741,000	25,913,000	13,702,000
Georgia	13,433,000	13,661,000	10,720,000
Idaho	1,880,000	1,641,000	1,856,000
Indiana	20,556,000	15,484,000	13,085,000
Kansas	14,123,000	14,061,000	14,625,000
Kentucky	7,422,000	7,239,000	6,087,000
Louisiana	8,878,000	10,195,000	8,146,000
Maine	1,596,000	1,106,000	737,000
Maryland	6,823,000	6,138,000	5,361,000
Minnesota	15,449,000	13,964,000	11,881,000
Mississippi	6,545,000	6,988,000	4,762,000
Missouri	23,530,000	19,355,000	15,686,000
Nevada	531,000	546,000	544,000
N. Hamshre	1,450,000	1,016,000	779,000
N. Mexico	1,474,000	1,493,000	1,494,000
N. Carolina	16,342,000	14,672,000	10,916,000
N. Dakota	4,295,000	4,210,000	3,816,000
Oklahoma	16,783,000	14,817,000	10,623,000
Oregon	6,327,000	6,320,000	5,475,000
S. Carolina	7,940,000	6,789,000	6,712,000
S. Dakota	4,232,000	3,953,000	3,091,000
Texas	33,139,000	35,962,000	31,995,000
Utah	2,488,000	2,012,000	1,796,000
Virginia	8,601,000	8,012,000	6,422,000
Washingt'n	10,268,000	11,126,000	9,343,000
W. Virgnia	3,515,000	3,422,000	3,023,000
Wyoming	975,000	977,000	1,577,000
Total	298,572,000	282,656,000	235,854,000
Daily avr.	9,631,000	10,095,000	8,423,000
Increase over previous year:			
Amount		46,802,000	
Pct.		19.8%	
Dis.C'lu'bia	3,417,000	3,154,000	2,775,000
Iowa	14,938,000	14,171,000	
Michigan	30,507,000	30,062,000	20,529,000
Nebraska	9,247,000	8,513,000	
Ohio	37,576,000	33,985,000	
Rhd. Isl.	2,950,000	2,478,000	
Wisconsin	13,083,000	11,593,000	

SPRING CONVENTION OF MICHIGAN JOBBERS

GRAND RAPIDS, Mich., Apr. 19.—Discussion of plans for attacking the Michigan kerosene inspection law will feature the spring convention of the Michigan Independent Oil Men's Association to be held at Lansing May 6, according to James A. Gilmore, secretary.

The association already had worked out plans to ask an injunction against the enforcement of the inspection charging that the law was invalid, but a recent decision of the United States Supreme Court holding that the Indiana oil inspection law was constitutional has necessitated a change in the plans of attacking the Michigan law.

Lawyers who are to handle the case have been invited to the Lansing convention to take part in the discussion and explain various methods of procedure.

In order that the entire convention might be devoted to a general discussion of problems facing the Michigan independents, no set program has been prepared, Mr. Gilmore said. Special efforts are being made to have every independent oil company in the state represented at the convention.

COL. STEWART ON NORTHWEST

CHICAGO, Apr. 17.—The majority of the directors of the Standard Oil Co. of Indiana, returned from a trip of one week, through parts of Wisconsin, Minnesota, North Dakota, Iowa and Illinois, at which the local staffs were visited. Col. R. W. Stewart, chairman of the board, stated that the northwest was showing great progress. Everywhere the people are optimistic, he said. There is a good deal of building going on and the condition of the farms and country towns indicated prosperity and thrift. He was particularly impressed with that part of North Dakota visited. Diversified farming has done much to improve conditions in sections which suffered from the one-crop idea.

LOUISIANA TAX INCREASE

BATON ROUGE, La., Apr. 19.—An increase in the state gasoline tax from 2 to 4 cents a gallon will be asked from the Legislature by the police jury association of Louisiana, as a result of a meeting of the association here last week. Under the proposed new law 3 cents of the tax would be used for the maintenance of state highways and 1 cent for construction and maintenance of parish highways.

REFINERY AT EDMONTON

CHATHAM, Ont., Apr. 17.—Alberta Refineries, Ltd., which recently resumed operations at Edmonton, has commenced shipping refined oil. The company has a contract for 100,000 bbls. of topped oil for fuel for the Canadian National Railways The Union Oil Co. has secured a site in Edmonton and will this year commence the construction of a $50,000 distributing plant, to be followed by a modern refining plant if sufficiently extensive crude oil production is developed in Alberta.

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Brief Items for Plant Operators

STANDARD IS NEEDED FOR DESIGNATING OILS

Viscosity is the most important property by which the suitability of an oil for lubricating an internal combustion engine can be determined, but the viscosity changes greatly with changes of temperature and also with the amount of dilution of the oil in the engine by unburned fuel. The temperature of the oil in the crankcase may vary from below zero to 212 degrees Fahrenheit, and the dilution may vary from practically nothing to a very high percentage. The average amount of dilution in the United States probably is about 15 per cent in summer and 25 per cent in winter, observes H. C. Mougey, chief chemist of the General Motors Corp. research laboratories, in a paper published in the April issue of the Journal of the Society of Automotive Engineers.

There is real need of a standard system of designating oils of different properties that will enable the automobile engineers to recommend oils that are suitable for use in the engines they design and so that the public can buy oils of the grades recommended by the automobile builders. Committees representing the Society of Automotive Engineers and the American Society for Testing Materials are now working on this problem, but their wark will be of no avail unless the oil companies will mark their oils by some recognized standard system.

H. C. Dickinson of the Bureau of Standards has suggested that the viscosity of oils should be compared at a given temperature and the viscosity grade be indicated by numbers instead of by the words "light," "medium," "heavy" and so on. A subcommittee of the A. S. T. M. suggested a test temperature of 130 degrees Fahrenheit for comparing the viscosities of low-viscosity oils ordinarily used in automobiles and 210 degrees Fahrenheit for high-viscosity oils ordinarily used in trucks and tractors. By taking numbers representing one-tenth of the viscosity at 130 degrees and the actual viscosity at 210 degrees, a series of numbers, in an increasing order, would be obtained that could be used to represent the viscosity. This would not interfere with any trade names or the names "light," "medium" or "heavy" that are used now by the oil companies.

This suggested system is not intended to replace the system of "purchasing agents' specifications" now in use by both the refiners and the vehicle builders but to enable the vehicle owner to obtain oil of the proper grade or viscosity.

COOPERATIVE RESEARCH UPON MOTOR FUELS

For several years the American Petroleum Institute and the National Automobile Chamber of Commerce have supported cooperative researches pertaining to the problems of motor fuels. The Society of Automotive Engineers, through its research committee, laid out a comprehensive program of study of the influence of gasoline volatility upon the performance of cars and trucks, and a number of automobile builders agreed to make tests with various grades of fuel with particular reference to engine power, acceleration and fuel economy. The first series of tests was conducted in the summer of 1922 and immediately thereafter arrangements were made for similar tests during the winter.

It was observed that one of the main difficulties encountered with fuels of low volatility was excessive dilution of the lubricating oil in the crankcase. New problems arose continually, such as the influence of the volatility of the fuel and the temperature of the cooling medium and lubricating oil on dilution of the oil. Consequently, the original program was expanded to include a thorough study of the important factors influencing dilution.

Considerable laboratory work was carried on at the same time at the Bureau of Standards in Washington and the results have been very gratifying. It was found that to reduce dilution when using a given fuel it is desirable to

(1) Operate with high cylinder-wall temperatures;

(2) Reduce the time required to bring the engine up to normal operating temperatures;

(3) Reduce the time of operation with rich mixtures;

(4) Operate at high oil temperatures;

(5) Provide adequate ventilation in the crankcase.

Fuels that are suitable for engine compressions much higher than the conventional are now produced in large quantity. However, before a gradual change to higher compression ratios can be expected, the automotive industry must be assured that such nondetonating fuels shall be obtainable throughout the country. Without doubt a number of strong inducements to change gradually to higher compression ratios exist. Nondetonating fuels can be produced in increasing quantity in response to demand, but the demand will be determined by the design of the engine. For this reason, cooperative research between the petroleum and the automotive industries seems highly desirable.

OPERATING INDIANA PLANT

CHICAGO, Apr. 17. — The Graver Corp., which has been operating the plant of the Indiana Oil & Refining Co. at Columbus, Ind., because of obligations incurred in the construction of the plant, will install a Jenkins process still to modernize the refinery. The Graver Corp. states it is not in the refining business and will operate the plant until the obligations incurred in its construction are wiped out.

N. P. A. APPROVES STANDARDS FOR TESTS

The trustees of the National Petroleum Association at the spring meeting held last week at Cambridge Springs, Pa., approved the test methods and standards recommended by the association's Departments of Standards and Tests. This department, which is headed by F. G. Clark of the F. G. Clark Co., Cleveland, Ohio, has spent considerable time in studying the matter of tests and standards applicable to the eastern refining operations.

Following is a summary of the official report approved by the trustees:

1. Gravity.

The relationship between true specific gravity at 60 degrees Fahrenheit and degrees A. P. I. (no longer degrees Baume) is on the basis of the 141.5 modulus.

The C. J. Tagliabue Manufacturing Co. has issued "New and Revised Tag Manual or Inspectors of Petroleum," which contains tables for correcting gravity for temperature and showing the relationship between specific gravity, A. P. I. gravity and pounds per gallon. These tables (barring improbable typographical errors) are in agreement with a circular issued by the Bureau of Standards, entitled "National Standard Petroleum Oil Tables," circular No. 154.

If any abridged tables are used the A. S. T. M. Method D206-25 should be followed. This is the same abridged table as the Bureau of Standards Letter Circular L. C. 160, revised July 14, 1925.

The tables contained in the "New and Revised Tag Manual" and in "National Standard Petroleum Oil Tables" are to be considered as "standard" by this association.

2. Distillation of Gasoline, Naphtha, Kerosene, Etc.

A. S. T. M. Serial Designation D86-25T.

B. M. Technical Paper No. 323A—pages 46-51.

Note: Cotton is left off the thermometer bulb.

In the Government method, provision is made for small corrections for variations in barometric pressure. The A. S. T. M. method does not include these; but Committee D-2 is studying the matter. Otherwise, the two methods are exactly the same.

The current A. S. T. M. method is to be considered the "standard" of this association.

Distillation of Natural Gas Gasoline.

A. S. T. M. Serial Designation D216-25T.

3. Doctor Test Gasoline, Naphtha and Kerosene.

B. M. Technical Paper No. 323A—pages 85-86.

4. Mineral Acids in Gasoline.

B. M. Technical Paper No. 323A—page 80.

5. Flash Point of Kerosene and Other Petroleum Products of Comparatively Low Flash.

Tag Closed Cup Tester.

A. S. T. M. Serial Designation D56-21.

B. M. Technical Paper No. 323A—pages 52-55.

6. Burning Test of Prime White and Water White Kerosene.

A. S. T. M. Serial Designation D187-24T.

B. M. Technical Paper No. 323A—page 67.

Burning Test for Long Time Burning Oil for Railway Use.

A. S. T. M. Serial Designation D219-25T.

7. Color Test for Gasoline, Naphtha and Kerosene.

Saybolt Chromometer.

A. S. T. M. Serial Designation D156-23T.

B. M. Technical Paper No. 323A—pages 30-32.

8. Floc Test for Kerosene.

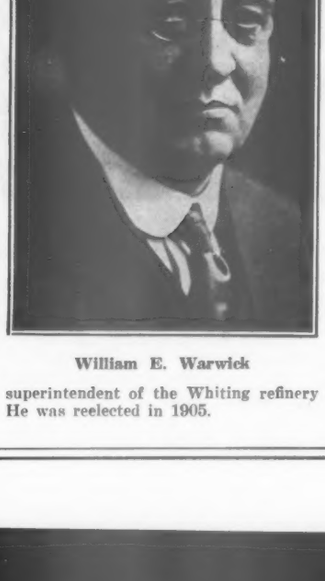
B. M. Technical Paper No. 323A—page 64.

9. Sulphur in Gasoline, Naphtha and

(Continued on Page 160)

AMONG THE TECHNICAL MEN

William E. Warwick, vice president and a member of the board of directors of the Standard Oil Co. of Indiana, has been connected with the manufacturing department of the company for the past 27 years.



William E. Warwick

He entered the employ of the company at its Whiting, Ind., refinery in 1889 as a draftsman. He took an active part in the growth of the refinery which is now one of the largest and most complete plants in the United States. After serving as a draftsman for a time he was made assistant to the master mechanic. Later he was placed in charge of the paraffin department and from that position he was made superintendent of the entire plant.

Due to the successful manner in which he managed the Whiting refinery he was made a member of the board of directors and in 1919 he was elected a vice president of the company. His offices are now located at the Chicago headquarters of the company.

Mr. Warwick was born in Oshkosh, Wis. In 1888 he graduated as a mechanical engineer at Iowa State University at Ames, Iowa. In 1903 while superintendent of the Whiting refinery he was elected mayor of that city. He was reelected in 1905.

NEW PORTABLE PLANT INSTALLED AT MEHAN

The first Newton process portable natural gasoline plant is being installed by the Hurley Gasoline Co. of Tulsa, at Mehan, Payne County, Oklahoma. This plant is being erected in addition to a permanent plant of the same process, also under construction.

Although the Hurley Brothers are agents for the Newton process, these plants will be owned directly by the Hurley Gasoline Co. This company recently sold its last two plants, those of the Hur-Bar Gasoline Co. at Breckenridge, Tex., to the Hanlon Gasoline Co., a subsidiary of Chestnut-Smith Corp.

The Mehan plant will handle approximately 15,000,000 feet of gas daily but until tests can be made it will not be known what the gasoline capacity will be. The portable plant will be in operation by May 1, and the permanent plant shortly after that.

S. C. Hughes, who was superintendent of the Hur-Bar Gasoline Co. plants at Breckenridge, is directing the construction of the Hurley plants at Mehan.

REFINERY FOR CRAIG, COLO.

CASPER, Wyo., Apr. 17.—Because of the high freight rate on crude from the Moffat Field in Moffat County, Colorado, to Casper, The Texas Company is considering the building of a refinery at Craig, where the pipe line from the Moffat Field meets the railroad. The field produces about 3,000 bbls. daily and only a small refinery would be needed. The cost of freight shipments of petroleum products from a refinery is much less than the cost of crude oil shipments.

All sections of

HUGHES

CHROME NICKEL

STEEL VALVES

are

cylindrical

or

spherical

HUGHES TOOL COMPANY

Branch Plants
LOS ANGELES, CALIF.
OKLAHOMA CITY, OKLA.

MAIN OFFICE AND PLANT
HOUSTON, TEXAS

Export Office
NEW YORK CITY, N.Y.

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

	Apr. 20		Apr. 13		Apr. 6	
OKLAHOMA (Group 3)—						
50-52 450 end point	.09¼	.09⅜	.09	.09¼	.09⅛	.09¼
56-58 450 end point	.09⅜	.09⅞	.09⅝	.09¾	.09⅝	.09¾
58-60 450 end point	.10	.10⅛	.09¾	.10	.09¾	.10
58-60 437 end point (U. S. Motor)	.10¼		.10	.10¼	.10	.10¼
60-62 400 end point	.11⅛	.11¼	.11	.11¼	.11⅛	.11¼
64-66 375 end point	.12⅛	.12⅜	.12	.12¼	.12	.12¼
68-70 360 end point	.12⅝	.13	.12¾	.12⅞	.12¾	.12⅞
KANSAS—						
58-60 437 end point (U. S. Motor)	.10½	.10⅝	.10¼	.10½	.10¼	.10½
NORTH TEXAS—						
48-50 450 end point (Naphtha)	.09	.09¼	.08⅞	.09	.09	
50-52 450 end point (Naphtha)	.09⅛	.09¼	.09		.09	.09⅛
56-58 450 end point	.09⅝	.09¾	.09½	.09⅝	.09½	.09⅝
58-60 437 end point (U. S. Motor)	.10¼		.10		.10	.10⅛
60-62 400 end point	.11¼		.11	.11¼	.11¼	
64-66 390 end point	.11⅞	.12	.11⅝	.11⅞	.11⅝	.11⅞
64-66 375 end point	.12¼	.12⅜	.12	.12¼	.12	.12¼
68-70 360 end point	.12¾	.12⅞	.12¾	.12⅞	.12¾	.12⅞
NORTH LOUISIANA—						
56-58 450 end point	.09⅞	.10	.09½	.09¾	.09⅝	.09¾
58-60 437 end point (U. S. Motor)	.10¼	.10½	.10⅛	.10¼	.10⅛	.10¼
64-66 375 end point	.12⅝	.12⅞	.12¼	.12½	.12¼	.12½
ARKANSAS—						
58-60 450 end point	.10	.10¼	.09¾	.10	.09¾	.10
58-60 437 end point (U. S. Motor)	.10⅜	.10½	.10⅛	.10¼	.10⅛	.10¼
64-66 375 end point	.12¼	.12½	.12¼	.12½	.12¼	.12½
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (U. S. Motor)	.13	.13¼	.12½	.12¾	.12½	.12¾
PENNSYLVANIA—						
52 Naphtha	.11½	.11¾	.11	.11¼	.11	.11¼
54 Naphtha	.11¾	.12	.11¼	.11½	.11¼	.11½
56 Naphtha	.12	.12¼	.11¾	.12	.11¾	.12
58 Naphtha	.12½	.12¾	.12¼	.12½	.12¼	.12½
60 Gasoline	.13	.13¼	.13	.13¼	.13	.13¼
62 Gasoline	.13½	.13¾	.13½	.13¾	.13½	.13¾
64 Gasoline	.14	.14¼	.14	.14¼	.14	.14¼
66 Gasoline	.16	.16¼	.16	.16¼	.16	.16¼
68-70 Gasoline	.19	.19½	.19	.19½	.19	.19½
CALIFORNIA—						
54-58 437 end point (U. S. Motor) domestic	.12½	.13	.12½	.13	.12½	.13
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 end point (Naphtha)	.09	.09¼	.09	.09¼	.09	.09¼
56-58 450 end point	.09¾	.09⅞	.09½	.09¾	.09½	.09¾
58-60 437 end point (U. S. Motor)	.10¼	.10⅜	.10	.10¼	.10⅛	.10¼
60-62 400 end point	.11¼	.11½	.11⅛	.11¼	.11¼	.11½
64-66 375 end point	.12¼	.12½	.12	.12¼	.12⅛	.12¼
68-70 360 end point	.13	.13¼	.12¾	.13	.12¾	.13

*Colorado points.

NATURAL GASOLINE

	Apr. 20		Apr. 13		Apr. 6	
OKLAHOMA (Group 3)—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.09		.08¾	.09	.09	.09¼
Grade A, 72-79.9, 375 e.p., rec. 90%	.09		.09		.09	.09¼
Grade BB, 84-92, 375 e.p., rec. 85%	.08	.08½	.07⅞	.08	.08⅛	.08¼
Grade B, 76-83.9, 375 e.p., rec. 85%	.08	.08⅛	.07⅞	.08	.08⅛	.08¼
Grade C, 80-90, 375 e.p., rec. 78%	.07¾	.08	.07½	.07¾	.08	
NORTH TEXAS—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.09	.09⅛	.08¾	.09	.09	
Grade A, 72-79.9, 375 e.p., rec. 90%	.09	.09⅛	.08¾	.09	.09	.09¼
Grade BB, 84-92, 375 e.p., rec. 85%	.08	.08¼	.07⅞	.08	.08¼	
Grade B, 76-83.9, 375 e.p., rec. 85%	.08	.08¼	.07⅞	.08	.08¼	
Grade C, 80-90, 375 e.p., rec. 70%	.08		.07½	.07¾	.08	
NORTH LOUISIANA—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.09¼	.09½	.09⅛	.09¼	.09¼	.09½
Grade B, 76-83.9, 375 e.p., rec. 85%	.08¾	.09	.08½	.08¾	.09	.09¼
Grade C, 80-90, 375 ep., rec. 78%	.08½	.08¾	.08	.08¼	.08¾	.09
CALIFORNIA—						
78-85 absorption, 360-390 end point	.16	.16½	.17	.17½	.17	.17½
78-84 compression, 350 end point	.16	.16½	.17	.17½	.17	.17½
CHICAGO DISTRICT (Based on Group 3)—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.09		.09		.09	
Grade A, 72-79.9, 375 e.p., rec. 90%	.09		.09		.09	.09¼
Grade BB, 84-92, 375 e.p., rec. 85%	.08	.08⅛	.08¼	.08¼	.08¼	
Grade B, 76-83.9, 375 e.p., rec. 85%	.08	.08⅛	.08⅛	.08¼	.08¼	
Grade C, 80-90, 375 e.p., rec. 78%	.07¾	.08	.07¾	.08	.08	

MOTOR NATURAL GASOLINE (BLENDS)

	Apr. 20		Apr. 13		Apr. 6	
OKLAHOMA (Group 3)—						
60-62 450 end point	.09½	.09¾	.09¼	.09½	.09¼	.09½
64-66 437 end point	.09¾	.09⅞	.09¼	.09½	.09¼	.09½
68-70 430-435 end point	.10	.10¼	.09¾	.10	.09¾	.10
NORTH TEXAS—						
64-66 437 end point	.09¾	.10	.09⅝	.09¾	.09⅝	.09¾
PENNSYLVANIA—						
*60-62	.12¼	.12½	.12¼	.12½	.12¼	.12½
*64-66	.12½	.12¾	.12½	.12¾	.12½	.12¾
*66-68	.12¾	.13	.12¾	.13	.12¾	.13
*68-70	.12¾	.13	.12¾	.13	.12¾	.13
CHICAGO DISTRICT (Based on Group 3)—						
60-62 450 end point	.09¼	.09½	.09¼	.09½	.09¼	.09½
64-66 437 end point	.09¾	.10	.09½	.09¾	.09½	.09¾

*At Sistersville, W. Va.

BURNING OIL

	Apr. 20		Apr. 13		Apr. 6	
KANSAS—						
41-43 water white Kerosene	.07½	.07⅝	.07¼	.07½	.07	.07¼
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.07¼	.07½	.06¾	.06⅞	.06¾	.06⅞
42-44 water white Kerosene	.07½	.07⅝	.07¼		.07⅛	.07¼
NORTH LOUISIANA—						
41-43 prime white Kerosene	.07½	.07⅝	.07¼	.07½	.07	.07¼
ROCKY MOUNTAIN STATES—						
*40-41 water white Kerosene	.10¼	.10⅜	.09¾	.09⅞	.09⅝	.09¾
NORTH TEXAS—						
41-43 water white Kerosene	.07⅛	.07¼	.07	.07⅛	.07	.07⅛
ARKANSAS—						
41-43 water white Kerosene	.07½	.07⅝	.07¼	.07½	.07¼	.07½
PENNSYLVANIA—						
43 Kerosene prime white	.08¼	.08½	.08¼	.08½	.08¼	.08½
45 Kerosene water white	.08¾	.09	.08¾	.09	.08¾	.09
46 Kerosene water white	.09½	.09⅝	.09½	.09⅝	.09½	.09⅝
47 Kerosene water white	.10	.10¼	.10	.10¼	.10	.10¼
34 Neutral	.08	.08¼	.08	.08¼	.08	.08¼
34 Sundebloom Neutral	.09	.09¼	.09	.09¼	.09	.09¼
36 Miners' Neutral	.07	.07¼	.07	.07¼	.07	.07¼
300 Mineral Seal	.07¾	.08	.07¾	.08	.07¾	.08
CALIFORNIA—						
38-40 water white (high burning test)	.07½	.08½	.07½	.08½	.09	.10
Engine distillate, 43-45 445 end point	.10¼	.10½	.10¼	.10½	.11	.11½
Engine distillate, 42-44 450 end point	.10	.10¼	.10	.10¼	.10¾	.11
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white Kerosene	.07⅜	.07½	.06¾	.06⅞	.06¾	.07
42-44 water white Kerosene	.07½		.07	.07¼	.07⅛	.07¼

*Colorado points.

FUEL OILS

	Apr. 20		Apr. 13		Apr. 6	
KANSAS—						
24-26 Fuel Oil	1.50	1.55	1.50	1.55	1.50	1.55
32-36 Gas Oil	.04¼	.04⅜	.04¼	.04⅜	.04¼	.04⅜
38-40 Distillate	.04½	.04⅝	.04½	.04⅝	.04½	.04⅝
OKLAHOMA (Group 3)—						
Below 22 Fuel Oil (sellers' cars)	1.27½	1.32½	1.30	1.35	1.30	1.35
22-26 Fuel Oil (sellers' cars)	1.32½	1.35	1.35	1.37½	1.35	1.37½
24-26 Fuel Oil (sellers' cars)	1.40	1.42½	1.40	1.45	1.40	1.45
26-30 Fuel Oil (sellers' cars)	1.45	1.50	1.45	1.50	1.45	1.50
28-30 Fuel Oil (sellers' cars)	1.55	1.60	1.55	1.60	1.55	1.60
32-36 Gas Oil (dark)	.04⅛	.04¼	.04⅛	.04⅜	.04¼	.04½
32-36 Gas Oil (light)	.04¼	.04⅜	.04⅜	.04½	.04⅜	.04½
36-38 Distillate	.04⅜	.04½	.04½		.04⅜	.04½
38-40 Straw Distillate	.04½	.04⅝	.04½	.04⅝	.04½	.04⅝
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars)	1.42½	1.45	1.55		1.55	1.60
32-36 Gas Oil (dark)	.04	.04⅛	.04⅛	.04¼	.04⅛	
32-36 Gas Oil (light)	.04⅛	.04¼	.04¼	.04½	.04¼	.04⅜
38-40 Straw Distillate	.04⅜	.04½	.04⅜	.04½	.04⅜	.04½
NORTH LOUISIANA—						
18-20 Fuel Oil	1.17½	1.20	1.20	1.25	1.20	1.25
32-36 Gas Oil	.04¼	.04⅜	.04¼	.04⅜	.04¼	.04⅜
ARKANSAS—						
38-40 Distillate	.04⅜	.05	.04⅜	.05	.04½	
32-36 Gas Oil	.04⅜	.04½	.04⅜	.04½	.04¼	.04⅜
16-20 Refinery Fuel Oil	1.20	1.25	1.20	1.25	1.20	1.25
GULF COAST (South Texas)—						
Gas Oil	.05	.05¼	.05	.05¼	.05	.05¼
Fuel Oil	1.65	1.70	1.65	1.70	1.65	1.70
PENNSYLVANIA—						
30-34 Fuel Oil	.05¾	.06	.05¾	.06	.05¾	.06
36-40 Fuel Oil	.06¼	.06⅜	.06	.06¼	.06	.06¼
CALIFORNIA—						
33-35 Distillate	.04¾	.05	.04¾	.05	.05¼	.05½
27-35 Distillate	.04	.04½	.04	.04½	.04½	.05
15-20 Fuel Oil (at tidewater)	1.00	1.04	1.00	1.04	1.00	1.04
27 plus Diesel	1.15	1.19	1.15	1.19	1.15	1.19
CHICAGO DISTRICT (Based on Group 3)—						
24-26 Fuel Oil (sellers' cars, Group 3)	1.40	1.45	1.40	1.45	1.40	1.45
22-26 Fuel Oil (sellers' cars)	1.35	1.40	1.37½	1.40	1.37½	1.40
18-22 (El Dorado)	1.30	1.35	1.30	1.35	1.25	1.27½
18-20 (Smackover)	1.07	1.10	1.07	1.12½	1.07½	1.10
32-36 Gas Oil	.04¼	.04⅜	.04¼	.04⅜	.04¼	.04⅜
36-38 Distillate	.04¼	.04⅜	.04¼	.04½	.04⅜	.04½
38-40 Straw Distillate	.04½	.04⅝	.04½	.04⅝	.04⅝	.04¾

LUBRICATING OILS AND WAX

	Apr. 20		Apr. 13		Apr. 6	
OKLAHOMA (Group 3)—						
70-80 vis., 2½ color, 20-25 cold test	.06	.07	.06	.07	.06	.07
100 vis., 3 color, 20-25 cold test	.06½	.07	.06½	.07	.06½	.07
100 vis., 2 color, 20-25 cold test	.07	.07½	.07	.07½	.07	.07½
150 vis., 4 color, 20-25 cold test	.09¼	.09¾	.09¼	.09¾	.09¼	.09¾
150 vis., 3 color, 20-25 cold test	.09½	.10	.09½	.10	.09½	.10
180 vis., 4 color, 23-28 cold test	.10	.10½	.10	.10½	.10	.10½
180 vis., 3 color, 23-28 cold test	.10¼	.10½	.10¼	.10½	.10¼	.10½
200 vis., 4 color, 23-28 cold test	.11	.11½	.11	.11½	.11	.11½
200 vis., 3 color, 23-28 cold test	.11¼	.11½	.11¼	.11½	.11¼	.11½
220 vis., 4 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
220 vis., 3 color, 25-30 cold test	.14½	.15	.14½	.15	.14½	.15
240 vis., 4 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
240 vis., 3 color, 25-30 cold test	.14½	.15	.14½	.15	.14½	.15
280 vis., 4 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
280 vis., 3 color, 25-30 cold test	.16½	.17	.16½	.17	.16½	.17
180 vis., 5 color, 23-28 cold test	.09¾	.10¼	.09¾	.10¼	.09¾	.10¼
200 vis., 5 color, 23-28 cold test	.10¾	.11¼	.10¾	.11¼	.10¾	.11¼
220 vis., 5 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
240 vis., 5 color, 25-30 cold test	.13	.14	.13	.14	.13	.14
280 vis., 5 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
Cylinder Stocks:						
180-200 vis., S. R. green, 40-45 cold test	.08½	.11	.08½	.11	.08½	.11
190-200 vis., S. R. green, 40-45 cold test	.08	.08½	.08	.08½	.08	.08½
170-190 dark green, 40-45 cold test	.06	.06½	.06	.06½	.06	.86½
190-200 vis. @ 210 "D" Bright Stock	.33	.35	.33	.35	.33	.35
200-210 vis. @ 210 "E" Bright Stock	.30	.31	.30	.31	.30	.31
150 vis. @ 210 "E" Bright Stock	.27	.28	.27	.28	.27	.28
150 vis. @ 210 "D" Bright Stock	.28	.31	.28	.31	.28	.31
Waxes:						
122-124 White Crude Scale Wax	.04⅞	.05	.04⅞	.05	.04¾	.05
PENNSYLVANIA—						
150, 3 color	.21½		.21½		.21½	
180, 3 color	.26		.26		.26	
200, 3 color	.28		.27¾		.27¾	

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

220, 3 color	.30		.30		.30	
600, steam refined	.15⅝		.15¾		.15¾	
635, steam refined	.19½		.19½		.19½	
650, steam refined	.21		.21		.21	
600, Pennsylvania flash	.26½		.27		.27	
630, Pennsylvania flash	.35		.35		.35	
*350, E filtered	.19½		.19½		.19½	
600, E filtered	.20¼		.20½		.20½	
*600, E filtered	.21½		.21½		.21½	
600, D filtered	.26¾		.27½		.27½	
550, E filtered	.18½	.18¾	.18½	.18¾	.18½	.18¾
550, D filtered	.22¼	.22½	.22¼	.22½	.22¼	.22½
Pennsylvania Bright Stock	.38		.37½		.37	
122-124 White Crude Scale Wax	.05⅜	.05½	.05⅜	.05½	.05⅜	.05½
†124-126 White Crude Scale Wax	.05½	.05⅝	.05½	.05⅝	.05½	.05⅝

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—						
Zero Black	.06	.07	.06	.07	.06	.07
No. 2 color, 100 vis., pale oil	.07½	.08	.07½	.08	.07½	.08
No. 2½ color, 150 vis., pale oil	.10	.10½	.10	.10½	.10	.10½
No. 3 color, 200 vis., pale oil	.11	.11½	.11	.11½	.11	.11½
No. 3½ color, 300 vis., pale oil	.13	.13½	.13	.13½	.13	.13½
No. 3¾ color, 500 vis., pale oil	.15	.15½	.15	.15½	.15	.15½
No. 4 color, 750 vis., pale oil	.18½	.19	.18½	.19	.18½	.19
No. 1½ plus color, 150 vis., pale filtered	.22		.22		.22	
No. 2 plus color, 200 vis., pale filtered	.23½		.23½		.23½	
No. 2 color, 300 vis., pale filtered	.27½		.27½		.27½	
No. 2½ color, 500 vis., pale filtered	.31½		.31½		.31½	
No. 2½ color, 750 vis., pale filtered	.41½		.41½		.41½	
No. 5 to 6 color, 200 vis., red oil	.09½	.10	.09½	.10	.09½	.10
No. 5 to 6 color, 300 vis., red oil	.11½	.12	.11½	.12	.11½	.12
No. 5 to 6 color, 500 vis., red oil	.13	.13½	.13	.13½	.13	.13½
No. 5 to 6 color, 750 vis., red oil	.17	.18	.17	.18	.17	.18
CALIFORNIA—						
130 pale, 2½-3 color	.10	.11½	.10	.11½	.10	.11½
200 vis., 2½-3 color	.13½	.14½	.13½	.14½	.13½	.14½
300 vis, 3 -3½ color	.15	.16	.15	.16	.15	.16
350 vis., 3½-4 color	.16½	.17½	.16½	.17½	.16½	.17½
400 vis., 3½-4 color	.18	.19	.18	.19	.18	.19
Red Neutrals:						
200 vis., 4½-5 color	.12	.13	.12	.13	.12	.13
300 vis., 5 -6 color	.13	.14	.13	.14	.13	.14
400 vis., 5 -6 color	.15	.16	.15	.16	.15	.16
500 vis., 4½-5 color	.18	.19	.18	.19	.18	.19
500 vis., 6 -6½ color	.16	.17	.16	.17	.16	.17
600 vis., 6½ plus color	.17	.18	.17	.18	.17	.18

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK DOMESTIC MARKET

Bayonne Refinery Prices:	Apr. 20	Apr. 13	Apr. 6
U. S. Motor Gasoline, 58-60 437	.13½	.13½	.13
*Bunker Oil, 14-16 Be.	1.75	1.75	1.75
*Diesel Oil, New York City	2.30	2.30	2.30
Furnace Oil, New York City	.10	.10	.10
Gas Oil, 28 plus	.05¾	.05¾	.06
41-43 Kerosene prime white	.08½	.08½	08½

*Lighterage 6.5c a barrel extra.

NEW YORK EXPORT PRICES

Motor Gasoline:	Apr. 20	Apr. 13	Apr. 6
58-60 Be. gravity, in cases	.28.40	.28.40	.27.90
Standard white Kerosene, in cases	.18.15	.18.15	.18.15
Water white Kerosene, in cases	.19.90	.19.90	.19.65
Export Gasoline, 64-66 Be.	.16½	.16	.16
†Lubricating Oils (in bulk):			
Cylinder Stock, light filtered, 60 s.r.	.29	.29	.29
No. 5 Bright Stock, .897 spec. grav.	.40	.40	.40
No. 1 White Neutral, .878 spec. grav.	.35	.35	.35
Pale Oil, "25" .898 spec. grav.	.12	.12	.12
Pale Oil, "28" .892 spec. grav.	.07½	.07½	.07½
No. 3 red oil, 160 vis., 7 color	.10¾	.10¾	.10¾
No. 2 red oil, .903 spec. grav.	.11½	.11½	.11½
No. 1 red oil, .905 spec. grav., 265 vis.	.13	.13	.13
Polar red oil, .903 spec. grav., 295 vis.	.13½	.13½	.13½
Paraffin Wax:			
120-122 a.m.p., per lb.	.05⅞	.05⅞	.06⅛
125-127 a.m.p., per lb.	.06	.06	.06¼
130-132 a.m.p., per lb.	.06¼	.06¼	.06½
135-137 a.m.p., per lb.	.06⅞	.06⅞	.07⅛
Petrolatum, in bbls., car load lots, per lb.:			
Amber	.03⅜	.03⅜	.03⅜
Light amber	.03⅝	.03⅝	.03⅝
Cream	.05¾	.05¾	.06
Lily white	.08	.08	.08
Snow white	.09½	.09½	.09½

†All lub prices in barrels.

LOS ANGELES EXPORT PRICES

	Apr. 20		Apr. 13		Apr. 6	
Kerosene water white	.05½	.06½	.05½	.06	.05	.05½
U. S. Motor Gasoline, 54-56 437 e.p.	.11	.11¼	.11	.11¼	.10	.10½

CRUDE OIL PRICES

OKLAHOMA, KANSAS AND NORTH TEXAS

***Prairie Oil & Gas Co.**

(Oklahoma, Kansas and North and East Central Texas.)

28° to 28.9°	$1.40
29° to 29.9°	1.48
30° to 30.9°	1.56
31° to 31.9°	1.64
32° to 32.9°	1.72
33° to 33.9°	1.80
34° to 34.9°	1.88
35° to 35.9°	1.96
36° to 36.9°	2.04
37° to 37.9°	2.12
38° to 38.9°	2.20
39° to 39.9°	2.28
40° to 40.9°	2.36
41° to 41.9°	2.44
42° to 42.9°	2.52
43° to 43.9°	2.60
44° to 44.9°	2.68
45° to 45.9°	2.76
46° to 46.9°	2.84
47° to 47.9°	2.92
48° to 48.9°	3.00
49° to 49.9°	3.08
50° to 50.9°	3.16
51° to 51.9°	3.24
52° and above	3.32

*Other major purchasers except as noted below.

Champlin Refining

(Garber and Tonkawa)

Schedule based on Prairie Oil & Gas Co. paying 10 cents additional for each grade of crude above 38° gravity.

Humble Oil & Refining Co.

(North and East Central Texas, Ranger, Mexia, Powell, Richland, Wortham, Currie, Moran, Big Lake and Lytton (Springs)

Same prices as Prairie Oil & Gas Co. schedule.

Magnolia Petroleum Co.

(Oklahoma, Kansas and North and East Central Texas, except Corsicana heavy, and Lytton Springs of South Central Texas.)

Below 28°	$1.20

Other grades same as Prairie Oil & Gas Co.

Iatan	$1.15
Corsicana heavy	1.15

(Panola County)

34° to 34.9°	1.70
35° to 37.9°	1.85
38° and above	2.00

Texhoma Oil & Refining Co.

(Wichita Falls, Texas, District.)

Below 32°	$1.88
32° to 32.9°	1.94
33° to 33.9°	2.00
34° to 34.9°	2.06
35° to 35.9°	2.12
36° to 36.9°	2.18
37° to 37.9°	2.25
38° to 38.9°	2.30
39° to 39.9°	2.36
40° to 40.9°	2.42
41° to 41.9°	2.48
42° to 42.9°	2.54
43° to 43.9°	2.60
44° and above	2.69

Gypsy Oil Co.

(Bristow, Glenn Pool, Morris and Perryman, Okla.)

25° to 25.9°	$1.16
26° to 26.9°	1.24
27° to 27.9°	1.32

Other grades same as Prairie Oil & Gas Co.

TEXAS PANHANDLE

Kay County Gas Co.

Magnolia Petroleum Co.

Below 31°	$1.20
31° to 33.9°	1.35
34° to 36.9°	1.55
37° to 39.9°	1.70
40° and above	1.75

GULF COAST

***Humble Oil & Refining Co.**

Grade A	$1.50
Grade B—	
Below 25°	1.25
25° to 25.9°	1.30
26° to 26.9°	1.35
27° to 27.9°	1.40
28° to 28.9°	1.45
29° to 29.9°	1.50
30° and above	1.55
Sour Lake (36° gravity) (The Texas Company)	1.79
Boling	1.50
High Island	1.25

*And other major purchasers, including The Texas Company, and the Sun Oil Co. High Island crude posted by the Sun Oil Co.

SOUTH CENTRAL AND SOUTHWEST TEXAS

***Magnolia Petroleum Co.**

Luling (contract)	$1.20
Mirando (Webb, Jim Hogg and Zapata Counties)	1.15
Rockdale-Minerva (Milam County)	1.25
Thrall	1.00
Callihan (Live Oak and McMullen Counties)	1.65
§Lockhart (Lytton Springs)	

Somerset (Grayburg Refining Co.)

28° to 28.9°	1.20
29° to 29.9°	1.30
30° to 30.9°	1.56
31° to 31.9°	1.64
32° to 32.9°	1.72
33° to 33.9°	1.80
34° to 34.9°	1.88
35° to 35.9°	1.96
36° to 36.9°	2.04
37° to 37.9°	2.12
38° and above	2.20

*Texpata Pipeline Co. also posts in Mirando Field paying same prices as Magnolia Petroleum Co. Crown Central Petroleum Co. pays $1.20 for Mirando crude.

§Lockhart prices same as for North and East Central Texas. Lockhart posted by Magnolia Petroleum Co. and Humble Oil & Refining Co.

ARKANSAS AND NORTH LOUISIANA

Standard Oil Co. of Louisiana

Caddo below 32°	$1.85
32° to 34.9°	2.00
35° to 37.9°	2.10
38° and above	2.20
Homer below 31°	1.60
31° to 32.9°	1.75
33° to 34.9°	1.85
35° and above	1.95
Haynesville below 33°	1.75
33° and above	1.85
El Dorado below 33°	1.75
33° and above	1.85
Bull Bayou, 32° to 34.9°	1.70
35° to 37.9°	1.85
38° and above	2.00
Cotton Valley	1.10
DeSoto	2.05
Crichton	1.85
Bellevue	1.50
Smackover, below 24°	1.00
24° to 24.9°	1.25
25° to 25.9°	1.30
26° to 26.9°	1.35
27° and above	1.40
*Stephens, Ark., below 26°	1.30
26° and above	1.50
**Calion (East El Dorado)	.95
§Urania	1.30

Other companies posting in these fields are: Gulf Pipe Line Co.; Atlantic Oil Producing Co. in Homer, Haynesville and Smackover; The Texas Company in Caddo, Bull Bayou, DeSoto, Crichton and Smackover.

*Posted by the Atlantic Oil Producing Co. **Posted by the Gulf Pipe Line Co. §Posted by the Louisiana Oil Refining Corp.

ROCKY MOUNTAIN STATES

Ohio Oil Co.-Midwest Refining Co.

Rock Creek (Wyo.)	$2.00
Salt Creek—	
29° to 29.9°	1.48
30° to 30.9°	1.56
31° to 31.9°	1.64
32° to 32.9°	1.72
33° to 33.9°	1.80
34° to 34.9°	1.88
35° to 35.9°	1.96
36° to 36.9°	2.04
37° and above	2.12
Big Muddy	2.00
Mule Creek	1.50
Grass Creek, light	2.15
Grass Creek, heavy	.90
Elk Basin	2.15
Lance Creek	2.15
Osage	2.15
Lost Soldier (contract)	1.10
Greybull-Torchlight	1.90
Hamilton Dome	1.35
Cat Creek (Mont.)	2.15
Sunburst (Mont.)	1.15
Florence (Colo.)	1.35
Artesia	1.70
Hogback (N. M.)	2.20

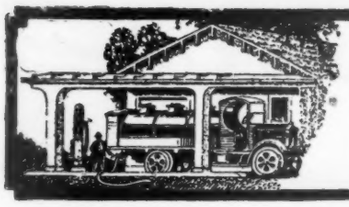
Note: Salt Creek, Osage, Cat Creek and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

EASTERN STATES

Joseph Seep Purchasing Agency

Penna Grade Oil in New York Transit Lines (New York)	3.65
Bradford District Oil in National	

(Continued on Page 152)



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns, Apr. 20.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Inclds tax of	Kero. Tank wagon
Chicago Dist.—				
†Less than 10 gals.	17.0	19.0	...	13.0

Tank wagon prices on April 19, 1923; g. up 1½c; May 8, g. up 1c; June 27, g. and k. up 1c; July 19, g. down 2c, k. down 1c; Oct. 10, g. down 2c; Oct. 21, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10, g. down 1.4c; Dec. 20, g. up 2c; Jan. 12, 1924, g. up 2c, k. up 1c; Feb. 5, g. up 2c, k. 1c; July 18, g. down 1c; July 30, g. and k. down 1c; Sept. 15, g. down 2c; Jan. 23, 1925, g. up 1c; Jan. 26, g. up 1c; Jan. 31, g. up 1c; Feb. 12, g. up 2c, k. up 1c; April 19, g. down 1c; July 14, g. up 1c; Aug. 25, g. down 2c, k. down 1c; Sept. 1, g. down 1c; Feb. 4, 1926, g. up 1c, k. up 1c.

Decatur, Ill.	17.0	19.2	...	13.5
East St. Louis	16.1	18.35	...	12.6
Joliet	17.4	19.4	...	13.7
Peoria	17.2	19.2	...	13.7
Quincy	17.2	19.2	...	13.3
Davenport, Ia.	19.5	21.5	2.0	13.9
Des Moines	19.5	21.5	2.0	13.9
Keokuk	19.5	21.5	2.0	13.9
Sioux City	19.0	21.0	2.0	13.5
Duluth, Minn.	20.5	22.5	2.0	14.6
Minneapolis	20.2	22.2	2.0	14.6
La Crosse, Wis.	20.2	22.2	2.0	14.1
Milwaukee	19.1	21.1	2.0	13.3
Madison	19.3	21.3	2.0	13.5
Detroit, Mich.	19 8	21 8	2 0	14.2
Grand Rapids	19.7	21.7	2.0	14.1
Saginaw	19.9	21.9	2.0	14.3
Evansville, Ind.	20.0	22.0	3.0	13.5
Fort Wayne	20.4	22.4	3.0	13.9
Indianapolis	20.4	22.2	3.0	13.7
South Bend	20.4	22.4	3.0	13.9
Fargo, N. D.	20.9	22.9	1.0	16.6
Huron, S. D.	19.0	21.0	3.0	15.1
Sioux Falls	19.0	21.0	3.0	14.6
*K. C., Mo.	19.9	21.9	3.0	12.3
*Springfield	19.8	21.8	3.0	13.2
*St. Louis	18.6	20.9	2.5	13.0
*St. Joseph	19.0	21.0	2.5	12.9
‡Wichita, Kan.	17.8	19.8	2.0	12.8
Bartlesville, Ok.	18.8	20.8	3.0	11.9

*State tax is 2c. Remainder is city tax.
†Quantity price on more than 100 gallons, 16.0.
‡At all Kansas points a discount of 1 cent a gallon is allowed from the tank wagon postings on dumps of 50 gallons or more.

The following monthly rebate system is effective on tank wagon schedules throughout the territory of Standard Oil Co. of Indiana: Over 750 gallons, ½c; over 2,000 gallons, ¾ cent; over 3,000 gallons, 1 cent; over 6,000 gallons, 1¼ cents; over 10,000 gallons, 2 cents. If quantity bought during the year is equal to 12 times the monthly agreed purchases the discount will be paid or credited on the entire quantity less monthly payments. Service station customers will receive discount of 1 cent a gallon on purchases amounting to 200 gallons a month or 2,400 gallons a year; and 2 cents a gallon on 600 gallons a month or 7,206 gallons a year.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Inclds tax of	Kero. Tank wagon
Atlantic City	17.0	....	...	15.0
Newark, N. J.	17.0	19.0	...	15.0
Annapolis, Md.	19.0	....	2.0	15.0
Baltimore	19.0	22.0	2.0	15.0
Cumberland	19.0	22.0	2.0	15.0
Washington	19.0	22.0	2.0	15.0
Danville, Va.	21.5	....	4.5	15.0
Norfolk	21.5	24.5	4.5	15.0
Petersburg	21.5	....	4.5	15.0
Richmond	21.5	24.5	4.5	15.0
Roanoke	21.5	24.5	4.5	15.0
Charleston, W. Va.	20.0	23.0	3.5	15.0
Keyser	20.5	....	3.5	15.0
Parkersburg	20.0	23.0	3.5	15.0
Wheeling	20.0	23.0	3.5	15.0
Charlotte, N. C.	21.0	24.0	4.0	15.0
Hickory	21.0	....	4.0	15.0
Mt. Airy	21.0	....	4.0	15.0
Salisbury	21.0	....	4.0	15.0
Charleston, S.C.	22.0	25.0	5.0	15.0
Columbia	22.0	25.0	5.0	15.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Inclds tax of	Kero. Tank wagon
Albany, N. Y.	19.0	....	...	16.0
*New York	19.0	....	...	16.0
Buffalo	19.0	....	...	16.0
Rochester	17.0	....	...	16.0
Syracuse	19.0	....	...	16.0
Boston, Mass.	19.0	....	....	....
Providence, R.I.	20.0	....	1.0	....
Augusta, Me.	22.0	....	3.0	16.0
Manchester, N. H.	21.0	....	2.0	16.0
Burlington, Vt.	21.0	....	2.0	16.0

*Price in steel barrels.
Note: Standard Oil Co. of New York does not generally quote service station price in its territory. In most cases the service station price is 2 or 3 cents higher than tank wagon price.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Inclds tax of	Kero. Tank wagon
*Pittsburgh, Pa.	18.0	23.0	...	16.0
*Philadelphia	18.0	23.0	...	16.0
*Scranton	18.0	23.0	...	16.0
*Allentown	18.0	23.0	...	16.0
Altoona	18.0	23.0	...	16.0
*Erie	18.0	23.0	...	16.0
Dover, Del.	20.0	23.0	2.0	16.0
Wilmington	20.0	23.0	2.0	16.0
Spring'fd, Mass.	19.0	22.0	...	16.0
Worcester	19.0	22.0	...	16.0
Boston	19.0	22.0	...	16.0
Providence, R.I.	20.0	23.0	1.0	16.0
Hartford, Conn.	21.0	24.0	2.0	16.0
New Haven	21.0	24.0	2.0	16.0

*Pennsylvania tax of 2 cents is collected by the dealer and paid by him direct to the State.

SOUTHWESTERN DISTRICT

***Magnolia Petroleum Co.**

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Inclds tax of	Kero. Tank wagon
Dallas, Tex.	15.0	17.0	1.0	11.0
Fort Worth	14.0	15.0	1.0	11.0
Houston	16.0	18.0	1.0	12.0
San Antonio	15.0	15.0	1.0	11.0
El Paso	18.0	18.0	1.0	13.0
Texarkana	17.5	20.5	1.0	13.0
Muskogee, Ok.	17.0	20.0	3.0	10.0
Oklahoma City	17.0	20.0	3.0	12.0
Tulsa	17.0	20.0	3.0	12.0
Little Rock	18.5	21.5	4.0	14.5
Ft. Smith, Ark.	18.5	21.5	4.0	14.5

*The following is the schedule of discounts on gasoline adopted by the Magnolia Petroleum Co. in Texas sales and the discounts are grade according to gallonage: Over 750 gallons a month, ½ cent; over 2,000 gallons, ¾ cent; over 3,000 gallons, 1 cent; over 4,500 gallons, 1¼ cents; over 6,000 gallons, 1½ cents; over 8,000 gallons, 1¾ cents; over 10,000 gallons, 2 cents. If the quantity bought during the year is 12 times the monthly agreed purchases, the discount will be paid or credited on the entire quantity for the year less any monthly purchases.

The schedule on service station deliveries is: Over 200 gallons a month, 1 cent; over 300 gallons a month, 1¼ cents; over 400 gallons, 1½ cents; over 500 gallons, 1¾ cents; over 600 gallons, 2 cents. The same rule applies for annual purchases as in the tank wagon discounts.

OHIO

Standard Oil Co. (Ohio)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Inclds tax of	Kero. Tank wagon
All Ohio points	21.0	23.0	2.0	14.0

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Inclds tax of	Kero. Tank wagon
Atlanta, Ga.	23.0	26.0	3.5	17.0
Augusta	23.0	26.0	3.5	17.0
Macon	23.0	26.0	3.5	17.0
Savannah	20.0	23.0	3.5	15.0
Birm'gham, Ala	20.0	23.0	2.0	16.5
Mobile	19.0	22.0	2.0	16.5
*Montgomery	21.0	24.0	3.0	17.5
Clarksdale, Miss	21.0	24.0	4.0	14.5
Jackson	21.0	24.0	4.0	13.5
Natchez	20.5	23.5	4.0	14.0
Vicksburg	20.5	23.5	4.0	14.0
Jack'ville, Fla.	21.0	24.0	4.0	15.0
Miami	23.0	26.0	4.0	16.5
Pensacola	21.0	24.0	4.0	15.5
Tampa	21.0	24.0	4.0	15.0
Covington	23.0	26.0	5.0	16.0
Louisville	23.0	26.0	5.0	15.0
Lexington, Ky.	22.0	25.0	5.0	16.0

*In addition to the state tax of 2 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and ½ cent on kerosene.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Inclds tax of	Kero. Tank wagon
*New Orleans	17.0	20.0	3.0	13.5
Alexandria	16.5	19.5	2.0	14.5
Baton Rouge	15.5	18.5	2.0	13.0
LaFayette	16.5	19.5	2.0	14.0
Lake Charles	17.0	20.0	2.0	14.5
Shreveport, La.	15.5	18.5	2.0	13.5
Memphis, Tenn.	13.5	21.5	3.0	15.5
Chattanooga	20.5	23.5	3.0	16.0
Knoxville	20.5	23.5	3.0	16.5
Nashville	19.5	22.5	3.0	16.0
Bristol	21.0	24.0	3.0	16.0
Little Rock, Ark	18.5	21.5	4.0	14.5

*Tax of 3 cents includes city tax of 1 cent.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Inclds tax of	Kero. Tank wagon
Omaha	18.25	20.25	2.0	13.5
Crawford	20.0	....	2.0	14.25
McCook	20.75	22.75	2.0	15.0
Norfolk	19.75	21.75	2.0	14.0
North Platte	20.75	22.75	2.0	14.75
Scottsbluff	20.25	22.75	2.0	14.25

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Inclds tax of	Kero. Tank wagon
Denver, Colo.	20.0	20.0	2.0	16.5
Pueblo	19.0	19.0	2.0	16.5
Casper, Wyo.	20.5	22.5	2.5	16.0
Cheyenne	21.5	23.5	2.5	16.5
Butte, Mont.	22.0	22.0	2.0	17.0
Helena	24.0	26.0	2.0	18.0
Salt Lake, Utah	25.0	27.0	3.5	18.0
Boise, Idaho	26.0	28.0	3.0	20.0
Albuquerque, N. Mex.	24.5	27.5	3.0	18.5

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Inclds tax of	Kero. Tank wagon
San Francisco	18.0	23.0	2.0	15.5
Los Angeles	16.5	20.5	2.0	15.5
Fresno	18.5	22.5	2.0	17.5
Reno, Nev.	23.5	27.5	4.0	19.0
Portland, Ore.	19.0	23.0	3.0	16.5
Seattle, Wash.	18.0	22.0	3.0	16.5
Spokane	22.0	26.0	2.0	20.5
Tacoma	18.0	22.0	2.0	16.5
Phoenix, Ariz.	25.0	28.0	3.0	21.5

CALIFORNIA

***Standard Oil Co.-Union Oil Co.**

Gravity—	Long Beach Huntington Beach Richfield Brea-Olinda Rosecrans-Dom'gues Torrance-Inglewood	Whittier La Habra Montebello	Kern River Newhall-McKittrick Midway-Sunset Elk Hills Lost Hills Belridge	Coyote	Santa Fe Springs	Coalinga	Wheeler Ridge	Santa Maria Ventura Salt Lake
14°	.85	.85	.75	.85	....	.75	.75	.85
15°	.87	.85	.75	.85	....	.75	.75	.85
16°	.90	.85	.75	.85	....	.75	.75	.85
17°	.94	.85	.75	.85	....	.75	.75	.85
18°	.98	.86	.75	.86	....	.75	.75	.85
19°	1.04	.87	.76	.87	....	.75	.75	.86
20°	1.10	.89	.82	.90	.89	.79	.78	.90
21°	1.16	.91	.90	.98	.91	.86	.81	.97
22°	1.22	.94	1.00	1.06	.94	.93	.86	1.04
23°	1.28	.97	1.11	1.14	.97	1.00	.89	1.11
24°	1.34	1.01	1.22	1.22	1.02	1.07	.93	1.18
25°	1.40	1.05	1.33	1.30	1.08	1.14	.97	1.25
26°	1.46	1.09	1.44	1.38	1.16	1.21	1.01	1.32
27°	1.52	1.13	1.55	1.46	1.24	1.28	1.05	1.39
28°	1.58	1.17	1.66	1.54	1.32	1.35	....	1.46
29°	1.64	1.21	1.77	1.62	1.40	1.42	....	1.53
30°	1.70	1.25	1.88	1.70	1.48	1.49	....	1.60
31°	1.76	....	1.99	....	1.60	1.56	....	1.67
32°	1.84	....	2.10	....	1.72	1.63	....	1.73
33°	1.92	....	2.21	....	1.84	1.70	....	1.79
34°	2.00	....	2.32	....	1.96	1.77	....	1.86
35°	2.08	....	....	....	2.08	1.84	....	1.92
36°	2.16	....	....	....	2.16	....	....	....
37°	2.24	....	....	....	2.24	....	....	....
38°	2.34	....	....	....	2.34	....	....	....
39°	2.44	....	....	....	2.44	....	....	....
40°	2.54	....	....	....	....	....	....	....
41°	2.64	....	....	....	....	....	....	....
42°	2.74	....	....	....	....	....	....	....

*Column 2—Long Beach and Huntington Beach crudes, 14 to 32 degrees, inclusive; Richfield and Brea-Olinda, 14 to 30 degrees; Torrance and Inglewood, 14 to 28; Dominguez, 24 to 42 degrees. Rosecrans crude ranges from 14 to 42 degrees, but only Union Oil Co. posts below 24 degrees.
Column 3—Whittier and La Habra crudes, 14 to 22 degrees; Montebello, 14 to 20 degrees.
Column 4—Kern River, Newhall and McKittrick, 14 to 19 degrees; Midway-Sunset and Elk Hills, 14 to 33 degrees; Lost Hills and Belridge, 14 to 34 degrees.
Column 6—Santa Fe Springs. Only Union Oil Co. posts below 24 degrees.
Column 9—Salt Lake, 14 to 19 degrees, inclusive; Santa Maria, 14 to 30 degrees; Ventura, 14 to 35 degrees. Posted only by Union Oil Co.

TANK WAGON PRICE CHANGES

April 10.—Magnolia Petroleum Co. reduced the service station price of gasoline 2 cents at El Paso, Tex.

April 13.—Magnolia Petroleum Co. reduced the service station price of gasoline 2 cents in San Antonio, Tex.

April 16—Magnolia Petroleum Co. reduced the service station price of gasoline 1 cent at Fort Worth, Tex.

April 16.—Standard Oil Co. of Indiana advanced kerosene 1 cent throughout its territory. Standard Oil Co. of Nebraska advanced kerosene 1 cent throughout Nebraska.

April 19.—Continental Oil Co. advanced kerosene 1 cent in Colorado, Wyoming and New Mexico.

CRUDE PRICE CHANGE

April 9.—Magnolia Petroleum Co. and the Kay County Gas Co. advanced Panhandle, Texas, crude 5 cents. This change was reported last week as effective April 12.

REAGAN COUNTY ROYALTIES

AUSTIN, Tex., Apr. 17.—A high record of $266,051.53 of University of Texas oil royalties was set on March production in Reagan County, when a check for $165,313.78 was received by the land office from the Big Lake Oil Co., and an additional $15,737.75 from the Texon Co. to supplement $85,000 previously paid. With these payments the university oil royalties passed the $3,000,000 mark. The money was deposited in the university permanent fund.

CRUDE OIL PRICES

(Continued from Page 151)

Transit Lines (Pennsylvania)	3.65
Penna Grade Oil in National Transit Lines (Pennsylvania)	3.55
Penna Grade Oil in Southwest Pa. Pipe Lines (Pennsylvania)	3.55
Penna Grade Oil in Eureka Pipe Line Lines (West Virginia)	3.50
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	3.30
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia)	2.20
Corning Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.35
Somerset Medium Oil in Cumberland Pipe Line Lines (Kentucky)	2.30
Somerset Light Oil in Cumberland Pipe Line Lines (Kentucky)	2.45
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky)	1.15
Gaines (Pennsylvania)	2.95
Keister (Pennsylvania)	2.45

MIDDLE WESTERN STATES

Ohio Oil Co.

Lima	$2.23
Wooster	2.35
Illinois	2.12
Indiana	2.00
Princeton	2.12
Plymouth	1.65
Waterloo	1.10
*Western Kentucky, 32.9° and below	1.85
33° to 35.9°	1.95
36° to 38.9°	2.05
39° and above	2.15
**Cumberland, Barren and Monroe Counties	2.45
†Oil Springs (Canada)	2.70
†Petrolia (Canada)	2.63

*Posted by Indian Refining Co.
**Posted by Paragon Development Co.
†Posted by Imperial Oil Co., Ltd.

MEXICAN

*Tuxpam light (f.o.b. Mex. ports)	$1.35
‡Panuco heavy (f.o.b. Mex ports)	1.15
Tuxpam (New York)	2.05
Panuco (New York)	1.70

*Plus 30.33c tax. ‡16.93c tax.

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Oil Securities Irregular and Inactive

Some Reach New Lows on Small Transactions. Tide Water Associated Issue Sells Down to New Low for Year

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church St., New York

NEW YORK, Apr. 19.—Oil securities were irregular and inactive during the past week. Some issues on small transactions registered new lows for the year. Tide Water Associated Oil was one of these, selling down to 21 against a high of 26⅞.

Stock of the Amerada Petroleum Corp. was listed on the New York Stock Exchange recently. Sales so far have ranged between 24¾ and 26⅛.

The company has declared an initial dividend of 40 cents a share, payable April 30 to stockholders of record April 22.

Standard of New York

In connection with the proposed Standard Oil Co. of New York-General Petroleum Corp. merger. General Petroleum plans to call all of its $3,212,000 preferred stock (of $25 par value) at par and accrued dividends.

A new Standard Oil of New York subsidiary will be organized to perpetuate the name of the General Petroleum Corp.

Standard Oil of New York stockholders will meet May 17 to act on increasing the authorized capital to $437,500,000 from $375,000,000, the increase to take care of the exchange for Standard Oil shares of General Petroleum common shares, on the basis of two of the former for each of the latter.

Salt Creek Consolidated

The financial report of the Salt Creek Consolidated Oil Co. as of December 31, 1925, shows current assets of $683,401 and current liabilities of $345,956. Capital stock amounted to $12,863,000 and surplus $4,130,389.

Standard of California

The Standard Oil Co. of California for the year ended December 31, 1925, reports net profit of $30,953,485 after interest, depreciation, depletion and Federal taxes, equivalent to $3.25 a share (par $25) earned on $237,910,850 outstanding capital stock, compared with $26,601,513, or $2.82 a share, on $235,228,446 stock outstanding in 1924.

The consolidated income account for 1925 compares with 1924 as follows:

	1925	1924
Net earnings	$47,779,878	$44,354,798
Depr. and depl.	13,388,476	13,535,368
Interest	1,072,917	1,197,917
Federal taxes	2,365,000	3,020,000
Net profit	$30,953,485	$26,601,513
Dividends	18,927,027	18,720,029
Surplus	$12,026,458	$7,881,484

The consolidated balance sheet of the Standard Oil Co. of California as of December 31, 1925, compares with 1924 as follows:

Assets	1925	1924
Plant	$219,623,318	$211,640,353
Securities	29,816,134	29,606,226
Inventories	84,392,320	71,193,533
Deferred charges	3,354,361	3,153,952
Notes and accts. rec.	21,709,295	20,228,994
Cash	14,827,199	18,081,814
Total	$373,722,627	$352,804,871
Liabilities		
Capital stock	*$237,910,850	*$235,228,447
Gold notes	20,000,000	22,500,000
Accts payable	8,518,810	9,074,480
Fed. tax res.	8,015,987	8,670,987
Accrued interest	416,667	468,750
Insurance res.	1,891,394	1,539,868
Merchandise due	140,239	233,317
Surplus earned	1,722,355	1,722,355
P. & L. surplus	95,106,325	72,366,667
Total	$373,722,627	$352,804,871

*Par value $25.

Panhandle P. & R.

The Panhandle Producing & Refining Co. for the year ended December 31, 1925, reports net operating income of $400,726 after expenses, taxes, interest, etc. After providing for preferred dividend reserve and reserves for depreciation, depletion, etc., there was a deficit of $403,838, comparing with a deficit of $605,657 in 1924.

The consolidated income account for 1925 compares with 1924 as follows:

	1925	1924
Gross earnings	$5,139,131	$4,665,167
Oper. exp., taxes, etc.	4,848,889	4,124,029
Operating profit	$ 290,242	$ 541,138
Other income	30,248	40,403
Gross income	$ 320,490	$ 581,541
Int., discount, etc.	73,921	76,290
Invent. adjustment	*154,157	97,012
Net operating inc.	$ 400,726	$ 408,239
Perf. divs. reserve	215,318	228,816
Depr., depl. and amort. reserve	589,246	785,080
Deficit	$ 403,838	$ 605,657

The balance sheet of the Panhandle Producing & Refining Co. as of December 31, 1925, is as follows:

Assets: Fixed assets, $6,038,840; cash, $55,644; receivables, $402,424; acceptances, $22,843; inventories, $638,042; deferred charges, $14,645; total $7,172,438.

Liabilities: Accounts payable, $313,166; notes payable, $347,840; accrued expenses $22,433; acceptances payable, $19,000; reserves, $594,860; preferred stock, $2,807,700; common stock and surplus, represented by 198,770 shares of no par value), $2,741,228; capital surplus from retirement of preferred stock, $326,211; total, $7,172,438.

In a letter to stockholders accompanying the annual report of the Panhandle Producing & Refining Co. for 1925, Roy B. Jones, president, states that the company in 1925 produced 350,278 bbls. of oil, valued at $696,634, an average of 960 bbls. daily. In 1924 production averaged 1,741 bbls. daily.

The company's refinery ran 1,216,539 bbls. of crude oil, or 3,333 bbls. daily in 1925.

As of March 1, 1926, the company merged its half interest in 8,063 acres and three producing wells in Hutchinson County, Texas, Panhandle, with 3,500 acres and three wells owned by the Gulf Oil Corp., receiving therefor a 25 per cent interest in the combined properties and the difference in value in cash. Considerable development on this property is planned this year.

Pan American Western

The Pan American Western Petroleum Co. and subsidiaries for the year ended December 31, 1925, shows net profit of $4,232,609, after depreciation, depletion, interest, Federal taxes, etc. This is equivalent to $8.46 a share earned on the combined 100,000 no par shares of Class A stock and 400,000 shares of no par Class B stock. Both classes of stock share alike in earnings, but the Class A stock has voting power, while the B stock has not.

The income account for 1925 is as follows:

Gross earnings	$28,583,179
Operating and other costs	19,150,428
Operating profit	$ 9,432,751
Depr. and depletion	3,940,675
Abandonment of prop.	648,370
General and admin. expense	700,048
Interest	528,125
Federal taxes	382,924
Net profit	$ 4,232,609

The balance sheet of the Pan American Western Petroleum Co. as of December 31, 1925, follows:

Assets: Oil land, leases, pipe lines, marketing stations, etc., less depreciation and depletion, $35,064,610; inventories, $15,015,144; accounts receivable, $997,548; oil receivable, $89,428; notes receivable, $198,504; cash, $2,415,711; United States Naval Reserve No. 1, $2,469,574; miscellaneous assets, $762,753; deferred charges, $215,022; total, $57,228,294.

Liabilities: Common Class A stock (represented by 100,000 no par value shares), $2,350,235; common Class B stock (represented by 400,000 no par shares), $9,400,000; funded debt, $11,250,000; mortgage, $410,000; advances, $13,950,000; accounts payable, $4,001,571; notes payable, $2,009,134; oil payable, $20,365; dividends payable, $250,005; reserve for Federal taxes $450,000; United States Naval Reserve No. 1, $2,399,023; surplus, $10,737,961; total, $57,228,294.

Continental Oil

The report of the Continental Oil Co. and subsidiaries for the year ended December 31, 1925, shows net income of $4,306,473 after depreciation, depletion, Federal taxes, etc., equivalent to $1.22 a share (par $10) earned on the outstanding $3,505,192 shares of stock.

The consolidated income account for 1925 follows:

Total income	$10,213,738
Drill. and devel. exp.	899,470
Balance	$ 9,314,268
Deprec., depl., Fed. taxes	4,982,297
Minor. stock proportion	25,498
Net income	$ 4,306,473

The consolidated balance sheet of the Continental Oil Co. and subsidiaries as of December 31, 1925, follows:

Assets: Cash and call loans, $4,763,530; Government bonds, etc., $2,187,847; notes receivable, $1,071,819; accounts receivable, $4,031,812; inventories, $8,508,698; investments, $1,994,022; other assets, $1,066,819; property, leases, wells, refineries, equipment, tank cars, pipe lines, etc., after depreciation and depletion, $46,713,522; deferred charges, $535,490; total, $70,873,559.

Liabilities: Capital stock, (par $10), $35,051,920; notes and accounts payable, $2,533,694; funded debt, $1,205,500; deferred liabilities, $302,943; reserves for Federal taxes, annuities and contingencies, $940,703; minority interest in affili-

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

Stocks—	Par	Clos. Quot. Apr. 19	Clos. Quot. Apr. 12	1926 High	1926 Low	1925 High	1925 Low	1924 High	1924 Low
American Republics	..	*63	*64½	74	63	79¾	48	48	25
Associated Oil	25	*47	48	59½	44¾	47¼	33	35⅝	27⅝
Atlantic Ref., com.	100	*107	110	110	97	117½	95½	140½	78½
Barnsdall "A"	25	25½	25½	33¾	26	33¾	18¾	29⅛	14
California Pet., com.	25	*32⅝	32⅞	38⅛	30⅝	34⅝	23⅞	29	19⅞
General Petroleum	25	58⅜	58⅜	65⅜	51¼	59	42	45	38⅝
Houston Oil	100	55	54	72	50¼	85	59	82½	61
Independent Oil & Gas	..	22½	21⅝	34	20¼	41¾	13½	16¼	5⅜
Indian Refining	10	9⅜	9½	13⅜	9½	14¼	5½	7	3⅜
Louisiana Oil	10	13¼	13⅜	19⅝	12	23⅜	13⅜	..	..
Maracaibo	..	21½	22	28⅞	20⅜	35½	20½	37¼	25⅜
Marland	..	52⅜	52½	60¼	49¼	60½	32⅝	42	29
Mexican Seaboard	..	8¼	8	12¼	6	22½	9	25⅜	14½
Mid-Continent Pet.	..	29⅝	28½	41	28⅝	38	25⅜	40¼	22⅝
National Supply	50	*61½	61⅞	65⅞	55½	71	54⅜	72⅝	54
Oil Well Supply	25	*30⅛	31	36	30½	38	23⅝	..	..
Pacific Oil	..	53⅝	54	83½	53⅝	78½	51¼	58¼	45
Pan. Amer. P. & T., com.	50	61½	63¼	76⅛	56⅜	83⅞	59½	65	44½
Pan. Amer., Western B.	..	37⅝	37½	46	34	49⅜	37¼	..	..
Phillips Pet.	..	42⅝	42¼	46⅛	42½	17⅛	36⅛	42¼	28½
Producers & Refiners	50	*11	12⅛	17⅛	11	32⅝	12½	43½	29⅝
Pure Oil, com.	..	26	25⅝	31	26	33⅜	25½	30¼	20
Royal Dutch, N. Y., sh.	13.40	51	51⅜	57⅝	50	57⅝	48½	59½	40⅜
Shell Transport	10	*42	*42⅜	47⅝	42	49	39⅜	42	33
Shell Union, com.	..	25	25	28⅛	24	28⅜	21⅝	22½	15⅜
Simms Pet.	10	20¼	20½	28⅝	20⅝	28⅛	17⅜	24	10⅝
Sinclair Consolidated, com.	..	19⅜	19⅝	24⅞	19⅝	34⅞	17	17⅛	15
Skelly Oil	25	30	30	32⅞	27	32½	21⅜	29	17⅛
Standard of California	25	53⅛	53⅜	62¼	54	67¼	51½	68½	55½
Standard of New Jersey, com.	25	42	41¼	46⅝	40¼	47½	38⅜	41½	33
Sun Oil Co.	..	31⅛	32	41⅝	31½	43⅞	38½	..	..
The Texas Company	25	50	50	54⅞	49	55	42⅜	45⅝	37⅜
Texas Pacific Coal &Oil	10	13	12⅜	19½	12½	23⅜	11	15¼	8¼
Tide Water Oil (new)	..	30½	30¼	39¼	30¼	‡152	122	151	116¼
Transcontinental	..	3⅝	3¼	4⅝	3	5⅜	3⅛	6¼	3⅝
Union Oil of California	25	42⅝	41⅝	49⅜	37¼	43⅜	33⅛	39	35½
Union Tank, com.	100	88	88	94	84	‡134	118	132⅞	94
White Eagle Oil & Refining	..	25⅝	26⅛	29⅝	26½	31⅝	25⅝	29⅝	23⅛
Standard Oils									
Anglo-American Oil	£1	17⅜	17½	19⅝	17⅝	26⅜	17½	18⅝	14⅝
Borne Scrymser	100	*230	*230	245	226	240	205	164	150
Buckeye Pipe Line	50	*53	*53½	59½	54⅛	72	53½	85½	51
Chesebrough Mfg. Co.	25	*65	67	72⅝	63	74	48¼	52½	29¼
Continental	10	20⅛	20½	25⅞	20¼	31½	21⅜	..	..
Crescent Pipe Line	25	*13½	*14	16	14⅜	17⅛	10	20	11⅝
Cumberland Pipe Line	100	*120	120½	137	126	156	128	148	108
Eureka Pipe Line	100	*65	*63	63¾	56	96	61½	105	74
Galena Signal, com.	100	21	19	32½	24	68½	23½	69¾	62½
Humble Oil & Refining Co.	25	56½	54⅝	99⅝	56	99	42½	43⅜	36
Illinois Pipe Line	100	*141	142	144	134½	154½	124	161	123
Imperial Oil (Ltd.)	..	33⅜	33¼	38⅝	32½	39¼	27¼	119	99
Indiana Pipe Line	50	64	65	67	58	84	57⅜	100	66
International Pet. Co.	10	30⅝	30⅜	35½	28⅝	35⅝	22½	24⅝	16⅝
National Transit Co.	12.50	*16	17	20⅜	18	25½	16½	25⅞	20⅝
New York Transit	100	45	*43	50	39	79	50	97	54⅜
Northern Pipe Line	100	*73⅜	*73	80½	70⅝	88	67½	107½	72
Ohio Oil Co.	25	59⅝	60¼	67⅝	59⅝	75¼	60	79½	53
Penn.-Mex. Fuel	25	20	19½	23	16¾	44	19	35⅝	27
Prairie Oil & Gas	25	51⅝	52	60¼	52¼	65½	45⅞	269	193
Prairie Pipe Line	100	*123	*125	127	122½	129⅝	105	111	100
Solar Refining Co.	100	*196	196	212	191	259	200	240	170
South Penn Oil	25	*38½	*156	50	40	‡197	139	176	117
Southwest Pa. Line	100	*64	*52	54½	47½	84	50	89	68
Southern Pipe Line	100	*68½	*65½	74½	61½	103	63	100	80½
Standard of Indiana	10	61⅞	62½	70⅛	61⅝	70⅝	59½	69⅝	54¼
Standard of Kansas	25	27	26½	36½	25	46	30¼	50½	32½
Standard of Kentucky	25	115½	116	134⅝	108	137	114⅝	121⅞	101
Standard of Nebraska	100	262	258	263	206	270	231	262	198
Standard of New York	25	30½	30⅝	47¼	31⅝	48⅝	40	48	37⅝
Standard of Ohio, com.	100	315	314	362	310	369	328	337½	277
Swan & Finch, com.	25	*18	18¼	21	18	27	12	28	20
Vacuum Oil	25	97¼	97½	109⅝	94⅛	109½	80½	83½	50½
Miscellaneous									
Gulf Oil Corp. of Pa.	25	*83	82⅝	93⅜	82½	98¼	63½	67⅝	56

*Bid, no sales. ‡Old stocks.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

Apr. 19	55.53	Mar. 15	56.34	Feb. 8	58.96
Apr. 12	56.07	Mar. 8	55.03	Feb. 1	58.51
Apr. 5	56.78	Mar. 1	55.84	Jan. 25	57.96
Mar. 29	56.18	Feb. 20	58.23	Jan. 18	57.38
Mar. 22	57.96	Feb. 15	57.51	Jan. 11	57.55

ated companies, $663,406; surplus, $30,-175,393.

Maracaibo Oil Exploration

The report of the Maracaibo Oil Exploration Corp. and subsidiaries as of December 31, 1925, shows total assets of $4,120,100, comparing with $4,095,052 at the end of 1924. Current assets were $1,206,414 and current liabilities $608 as contrasted with $1,274,167 and $9,141, against $3,790,911 in the previous year.

The consolidated balance sheet of the Maracaibo Oil Exploration Corp. and subsidiaries as of December 31, 1925, compares as follows:

Assets	1925	1924
*Property, plant and equipment	$2,544,436	$2,480,324
Cash	1,164,631	1,211,481
Accts. receivable	6,867	6,551
Material and supplies	34,917	56,136
Deferred assets	369,249	340,560
Total	$4,120,100	$4,095,052
Liabilities		
Capital stock and surplus	†$4,119,492	$3,790,911
Funded debt		295,000
Accounts payable	608	537
Accrued bond interest		8,604
Total	$4,120,100	$4,095,052

*After depreciation. †Represented by 330,-000 shares of no par value.

Pan American P. & T. Co.

Net profits of the Pan American Petroleum and Transport Co. for 1925 established a new high record, as shown in the annual report. Gross profits for the year aggregated $41,971,195, against $29,721,-151 in 1924. After all charges and reserves for depreciation, depletion and taxes the company reported a balance of $27,335,994 available for the capital stock, or $9.95 a share on the average amount of Class A and B stocks outstanding. In 1924 the net amounted to $15,-185,072, or $5.85 a share. The increase of $12,150,000 in net available for the stock was equal to 80 per cent.

The earnings for 1925 do not include the returns from the California properties sold last year to Edward L. Doheny and his associates, who orgainized the Pan American Western Petroleum Co. In 1922, when the company operated the California properties, gross profit aggregated $48,049,737 and net profit $31,-575,937.

The consolidated balance sheet on December 31, 1925, showed current assets of $53,497,794 and current liabilities of $16,607,731. The current assets included $21,953,685 cash, $11,303,374 accounts receivable, and inventory, carried at cost, of $12,903,340. Total assets amounted to $189,119,435. The statement says production amounted to 38,600,000 bbls. in 1925, a gain of 2,000,000 over 1924.

F. H. Wickett, chairman of the board of directors, in a statement to stockholders said:

"The balance sheet shows an investment in the Lago Oil & Transport Corp. on December 31, 1925, of $6,959,938, representing the cost of $497,869 Class A shares and 1,000,000 Class B shares of the capital stock of the company. The present market value of these stocks, based on exchange market quotations of the Class A stock, is approximately $25,-000,000. As a result of options exercised early in 1926, your company has acquired a majority of the capital stock of the Lago Oil & Transport Corp. and has assumed the management of the company as well as its operating subsidiaries."

Sinclair Pipe Line

The Sinclair Pipe Line Co.'s net income for 1925 was $2,864,866, after expenses, depreciation, interest and taxes, as compared with $2,503,319 in 1924, according to the annual statement. That was equal to $10.20 a share, earned on $28,084,000 outstanding capital stock, against $8.91 in 1924.

Operating revenue for 1925 was $16,-368,786 and other income $199,899. Expenses were $6,130,345, depreciation $5,623,386, and interest and taxes $1,950,-088. After payment of dividends of $1,965,908, surplus was $898,958, against $2,503,319 in 1924.

Total assets were $84,047,933. Liabilities totaled $76,449,698. Profit and loss surplus was $7,598,235.

Big Lake Oil

The Big Lake Oil Co. of Pittsburgh reports for 1925 a net income of $5,332,-965, after depreciation, depletion, taxes, abandoned property, etc. Of these earnings, $3,999,724 went to the Plymouth Oil Co., which owns 75 per cent of the Big Lake stock, and $1,343,241 to the Texon Oil Co., which owns 25 per cent. The Plymouth Oil earnings are equal to about $3.80 a share on the 1,050,000 shares of $5 par stock of that concern.

Shaffer Oil & Refining

The Shaffer Oil & Refining Co. has decided to resume dividends on the preferred stock, and declared a payment of $1.75 for the quarter ending June 30.

This will be the company's first dividend payment since September, 1923. No action was taken by the directors relative to the accumulated dividends.

For the 12 months ended February 28, the net income of the company, after expenses, maintenance and taxes, was $4,-839,859, as compared with $2,567,566 in the preceding year. Gross earnings were $16,266,733 as against $9,355,673. The balance, after interest, charges, available for depreciation, depletion, dividends, etc., was $3,251,267, as compared with $1,-111,464.

Sinclair Crude Oil Purchasing

Statement of Sinclair Crude Oil Purchasing Co. as of December 31, 1925, shows total assets of $122,951,735 comparing with $118,457,097 at end of 1924. Current assets totaled $105,157,381 and current liabilities $6,029,426 against $101,760,054 and $3,548,000, respectively, in preceding year. Profit and loss deficit was $452,258 comparing with deficit of $575,345 at end of 1924.

Balance sheet of Sinclair Crude Oil Purchasing Co. as of December 31, 1925, follows:

Assets: Capital assets, $16,397,375; cash, $7,214,702; accounts receivable, $11,820,695; inventories, crude oil, etc., $85,895,749; material and supplies, $157,-708; payments in advance, $68,528; deferred assets, $1,396,978; total, $122,-951,735.

Liabilities: Capital stock, $60,000,000; funded debt, $50,000,000; reserve for depreciation, $4,308,307; other reserves, $2,-614,169; unadjusted credits, $452,093; accounts payable, $4,394,298; accrued interest, taxes, etc., $1,635,129; profit and loss deficit, $452,258; total, 122,951,735.

Pierce Petroleum

In a letter to stockholders of Pierce Petroleum Corp., accompanying the report for 1925, William H. Coverdale, chairman, states, the work of rehabilitating and improving refineries at Sand Springs and Tampico was completed during the year and substantial progress made toward enlarging and improving marketing facilities.

The company showed net profit of $207,288, after deducting depreciation and including 75 per cent share of earnings of Consolidated Pipe Line Co. since acquisition of stock in December, 1924, inclusive of cash dividend of $48,000, but before surplus charges. This with surplus at January 1, 1925, of $66,960, brought surplus before charges to $274,-248. Losses on sales and scrapping of assets during 1925 of $246,146, proportion of reorganization expenses written off in 1925, additional loss on dismantling of property at Ranger, Tex., $24,-362, and miscellaneous charges, $74,108, totaling $415,582, resulted in a deficit at December 31, 1925, of $141,333.

OKLAHOMA GASOLINE MARKET IMPROVES

(Continued from Page 28)

60 437 gasoline, which was quoted earlier the past week at 10 cents, became fairly tight at 10¼ cents and refiners, who Monday were quoting below that latter price, were practically all up to that mark on Tuesday. Movement of the product at that price was not particularly active but jobbers were gradually coming to it.

Export purchases and inquiries for the 64-66 375 gasoline were on the basis of 12 cents Group 3 but by Tuesday little of this product was available under 12¼ cents. The 60-62 400 grade was bringing from 11⅛ to 11¼ cents with the trend toward the higher price.

Other gasolines and naphthas were less active but were strengthened in sympathy with the U. S. Motor and higher gravities.

Fuel Oil and Gas Oil

The falling off in domestic demand for fuel oil and gas oil was not accompanied by any great softening of these products. The lower grades of fuel and gas oil were slightly easier in tone and only a few concessions were made, these being chiefly on the 18-22 gravity product. This was available Tuesday at $1.27½ to $1.30 and the 22-26 grade at $1.32½ to $1.35 but other fuels were unchanged.

The demand for cracking stock was as strong as before and indications were that with an increase in gasoline orders it would be greater. A number of refiners, however, have been storing gas oil and have these stocks on which to draw. Gas oil Tuesday was available at 4⅛ cents, which was an eighth-cent under last week's market.

Higher gravity fuels still were practically unobtainable and due to this scarcity there has been little trading in these products for some time and quotations have been on more or less nominal level.

Kerosene and Distillates

The advance of 1 cent in tank wagon prices throughout the Standard Oil Co. of Indiana territory featured the kerosene market. The 41-43 water white grade Tuesday was scarce at 7¼ cents with some refiners quoting as high as 7½ cents. The 42-44 water white movements ranged from 7½ to 7¾ cents. The tank wagon advance had been expected so long that when it did come it was as a surprise to many and placed a premium on these products not experienced in the last five years.

Distillates continued firm but as with fuel oils and gas oil a slightly easier tone was apparent with a few concessions being made.

Natural Gasoline and Blends

Inquiries for natural gasoline were on the increase during the week, resulting in a gradual advance in market quotations. Some manufacturers still point out that there is considerable natural gasoline on hand as some have been storing in anticipation of higher prices.

Efforts have been made the past few weeks to move natural gasoline to the Pacific Coast and some of these sales are largely responsible for the decline in the California market. On the basis of posted California natural gasoline prices Mid-Continent sellers found it possible to underquote manufacturers of the Pacific state.

Reports Tuesday from California, however, indicated that it was getting more difficult to sell natural gasoline in that State. Grade C in Oklahoma Tuesday was held at 7¾ to 8 cents, the B grades at 8 cents and the A products at 9 and with this advancing market the differential between California material was growing small.

Lubricants and Wax

The increased placing of orders by jobbers in anticipation of early spring demand has been an important factor in stabilizing the Oklahoma lubricant markets the past week. A better movement was reported by most manufacturers and further disappearance of price cutting was evident. Wax was unchanged.

OIL AND GAS POWER CONFERENCE IN TULSA

The oil and gas power conference of the Mid-Continent section of the American Society of Mechanical Engineers will be held in the Mayo Hotel, Tulsa, next Thursday, Friday and Saturday, in connection with "Oil and Gas Power Week," being observed in various sections of the United States during the week from April 19 to 24.

Subjects of especial interest to the petroleum industry are on the program for the Tulsa meeting. At the meeting Thursday evening, Fred Thilenius of the Prairie Pipe Line Co. will discuss "Diesel Engines for Pipe Line Power." On Friday at the afternoon meeting at 2 o'clock, Dr. Gustav Egloff of the Universal Oil Products Co. will read a paper on "Anti-Knock Properties of Cracked Gasoline." That evening, William G. Heltzel of the Sinclair Pipe Line Co. will deliver an address on "Fluid Flow in Pipe Lines." A. J. Schlosser of the Barnsdall Corp. will discuss "Gas Engines" at the Saturday morning session, and during the afternoon meeting Earle W. Hodges of Henry L. Doherty Co. will speak on "Public Relations."

O. H. WILLIAMS DIES AT KANSAS CITY HOME

The many friends of O. H. Williams, prominent oil man, were shocked Monday to learn of his sudden death late Sunday night at his home in Kansas City, Mo. Death was due to apoplexy.

Mr. Williams was best known among the oil fraternity for his connection with the Mutual Oil Co., which at the time it was taken over by the Continental Oil Co. two years ago, was one of the largest independent organizations in the Mid-Continent Field. Mr. Williams organized the company and as president headed its activities for several years. After the merger with the Continental Co. he retired from active participation in the oil business although he continued as president of the Mutual Bank and Mutual Securities Co. of Kansas City.

O. H. Williams

Mr. Williams, who was 46 years old, was born at Schellsburg, Pa. He is survived by his widow, one son and two daughters.

J. W. AND A. E. HURLEY GIVEN LOVING CUP

J. W. and A. E. Hurley and the Hurley Gasoline Co. are now in possession of a large loving cup which was presented to them by their former employes at the two natural gasoline plants at Breckenridge, Tex., recently purchased by the Hanlon Gasoline Co.

In a letter, the employes explained that the cup was a token of the good will which had long existed between the employes and their former employers and expressed regret that their connections had been severed through the sale of the plants.

The employes expressed their high appreciation of their former superintendent, S. C. Hughes, who stayed with the Hurley Gasoline Co. when the plants were sold.

OFFICIALL SELECT TULSA

Tulsa was officially selected as the meeting place for the next annual convention of the American Association of Petroleum Geologists at a meeting of the executive committee. The convention dates has not been decided but it probably will be some time next March.

QUITS HUNGARIAN FIELD?

It is reported in Vienna that Anglo-Persian Oil Co. has abandoned drilling for oil and natural gas in Hungary, not renewing contract with the Hungarian Government.

PREVENTING STEAM LOSSES AT REFINERIES

(Continued from Page 31)

One feature of introducing exhaust steam into stills must be thoroughly understood. Exhaust steam carries considerable moisture and is lower in temperature than live steam. In running to stock, let us assume that the average temperature of the oil in the stills is 425 degrees during the period while steam is being introduced. Exhaust steam is around 225 degrees in temperature. Obviously, its introduction retards distillation, while the steam is superheated and the moisture is evaporated. To go back to our previous figure of 140 pounds of steam per barrel, a 500-bbl. crude still will take 70,000 pounds of steam during the run. To dry the 5 per cent moisture and superheat 200 degrees will require 9,590,000 B.T.U. which heat is robbed from the oil and must be made up by firing more fuel. At 25 per cent still efficiency (a lamentable but approximately correct average) one and one-half extra tons of coal are required during the run.

Furthermore, the distillation is retarded. Anything that retards distillation and results in longer exposure of the oil to heat, is detrimental to color and quality.

Therefore, if exhaust is used, it should first be superheated to a temperature as high as can safely be used; 450 to 500 degrees is all right. Tests have shown that 12 per cent of fuel is saved, and 20 per cent better time made when running with the steam superheated. Furthermore, a better quality stock results on account of the shorter time that the oil is exposed to heat. As to the cost of superheating, there is no operating charge if waste heat is used, and what better opportunity than to use the hot flue gas from the stills?

The same reasoning will apply to the use of live steam in a still, although the savings are not as much due to lower moisture content and higher initial temperature. In my opinion, it will pay to superheat any steam that is used in distillation.

WOULD LIMIT DISCOUNT TO QUANTITY SALES

(Continued from Page 146)

upon which to allow a discount, discontinue that policy throughout the State of Wisconsin. Because the companies felt obligated to carry out the contracts of that character which they now have in force, the Attorney General proposed that they make no new contracts and that they do not renew those now in effect, and that all new contracts for quantity discount on service station and tank wagon deliveries in Wisconsin be based upon deliveries in a single town, village or city.

"Being satisfied that the companies will acquiesce, the Attorney General recommends to the Commissioner of Markets that he shall immediately instruct all oil companies which have made or might make inter-city contracts for the sale or delivery of gasoline including therein contracts for the sale or delivery of gasoline in more than one municipality (city and—or village and—or town) to furnish a list of all such outstanding contracts or arrangements together with the date of expiration of each such contract or arrangement and that where there is such an arrangement without a contract providing for a specific date of expiration, the arrangement shall be considered as expiring not later than one year from the time of the beginning of such arrangement;

"That the Commissioner of Markets shall recommend to all such oil dealers not to make hereafter any new contracts or arrangements or renew any contracts or arrangements for such intercity sales or deliveries of gasoline;

"That the Commissioner of Markets shall without making any order thereon at this time, adjourn the hearing on proposed Order 25 for 90 days from April 14, 1926; and

"That the Commissioner of Markets shall immediately issue the proposed amendment to Order No. 23 omitting from such proposed amendment the requirement for the posting of prices on tank wagons."

SPRING MEETING OF EASTERN REFINERS

(Continued from Page 30)

Mattison explained how the oil industry through the American Petroleum Institute is about to put into effect uniform methods of accounting, to be in full operation in 1928. He told of the special difficulties encountered because of differences in operation and described the method of procedure and how it was determined to get up a general balance sheet first, which has now been formulated.

P. S. Tarbox, manager of the Independent Refining Co. at Oil City, spoke on "Reduction of Manufacturing Expense by Ascertainment of Refining Costs."

Testing of Oils

Fred G. Clark announced that the Bureau of Standards at Washington had agreed to set aside a day on which tests would be made of oils so that those engaged in this work in the oil industry could watch these tests. He urged the refiners to have their laboratory men go to Washington and watch these tests and said that Wednesday, May 19, had been suggested.

An address on "Why a Fire Marshall?" was given by Houston Dunn, managing director of the Association of Fire Marshals of the National Petroleum Association. He stressed the point that fires had resulted in publicity for the oil industry not of a favorable nature and said that "it behooves all of you to prevent any kind of a fire now so as not to add to the publicity." He pointed out how some companies have regular fire brigades and in his opinion it was better to have three or four men really trained than 20 or 30 who could do nothing but "run around."

Mr. Dunn said the fire marshal should make a regular monthly inspection. He advised the refiners to keep the hatches closed on their tanks and to take special precautions now "as there are more lightning losses in May than in July and August."

On Thursday evening there was a "Fellowship Supper" at which a program arranged by Fred G. Clark was given. On Friday morning the general subject was manufacture. There was an address on "Petroleum Refining Capacity Required in the United States" by Charles L. Parmelee and the remainder of the program was devoted to steam problems with addresses by H. A. Ross and H. S. Bell.

Department of Manufacture

A suggested program of the department of manufacture for the remainder of 1926 was outlined as follows:

"The work of this department on boiler house practice has abundantly justified itself in the case of those companies which have taken advantage of it. It is proposed to continue this work through the year with the view of having established by that time an efficient practice in continuous operation in all plants which participate.

The services embrace an adequate survey and analysis of the member's steam plant by an engineer, resulting in the installation of an efficient practice, and frequent inspections intended to keep the practical operation of the steam plant up to the standard which has been set. The cost of both services up to January 1, 1927, will be $550, but if a member has already had the services of an engineer in making a survey and established an efficient standard, the cost to January 1, 1927, will be $150, except that to those members who have employed an engineer and have also paid $75 in support of the department's work already undertaken, the further cost to January 1, 1927, will be $75. The adoption of this program depends upon the participation of 20 members. From expressions at the meeting it seems certain that 20 members will participate and that the program will be carried out.

E. M. Lyons presided at the Friday afternoon meeting and spoke on credit matters. He said the most important work is the interchange of credit information and declared that "merchandise is not well sold until full payment is made."

Leod D. Becker, executive secretary of the American Oil Burner Association, spoke on "What Domestic Oil Burning Will Mean to the Refiners." He said there are three different attitudes displayed by oil men in regard to oil burning: Those who know nothing about it and are against it; those who are indifferent and those who saw in oil burning a rounded out demand and encouraged it.

"The domestic oil burner means more to the industry than most of those in the industry realize," he declared. Mr. Becker pointed out that during the past year about 220,000 domestic burners were installed and 18,000 commercial ones, besides those for industrial uses. He estimated the increased demand for oil as a result at about 300,000,000 gallons. He figured the demand for the next heating season at about 450,000,000 gallons. "The demand for burning oil will give equilibrium to your markets," he said, "as the demand comes at a time when your equipment is only semi-active." The refiners can help by finding out specifically what oils are being used in this trade.

Resolutions were adopted on Thursday in memory of Col. U. G. Lyons, former president of the association, who died last fall. Colonel Lyons was one of the veteran refiners of the Pennsylvania Field.

PETROLIA PIONEER PASSES

CHATHAM, Ont., Apr. 17.—Alexander Craise, a pioneer of the Petrolia oil field, died recently at Port Dalhousie, Ontario, aged 87 years. Mr. Craise was active until within five weeks of his death, when he fell and broke his hip. He first came to Petrolia in 1864 during the oil boom days. He was a successful oil operator, and a director of the first crude oil association, organized in 1868.

LAREDO COMPANY FORMED

Morgan Oil Corp. of Laredo, Tex., has been incorporated, capital of $100,000, with William F. Morgan, A. T. Morgan and T. H. Morgan, Jr., incorporators. They have been operating as developers in the Laredo territory for some months and have drilled a large number of wells and own some production.

J. R. JAYNES DIES

CHATHAM, Ont., Apr. 17.—J. R. Jaynes, general manager of Urban Oils, Ltd., of Calgary, died recently after a few days illness from pneumonia. Mr. Jaynes had been in business in Calgary for 25 years, and had been for some time manager of Urban Oils, Ltd., which is drilling in the Border Field near Coutts.

VIEW OF TANK FARM AT BREA, CALIF.

General view of the Stewart tank farm of the Union Oil Co. at Brea, Calif., before the fire. The Brea refinery can be seen in center of picture. The orange and walnut trees shown at bottom of the picture were burned in the fire.

AXELSON SUCKER RODS

Extra Strength

in the Axelson Vanishing Thread

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LOS ANGELES
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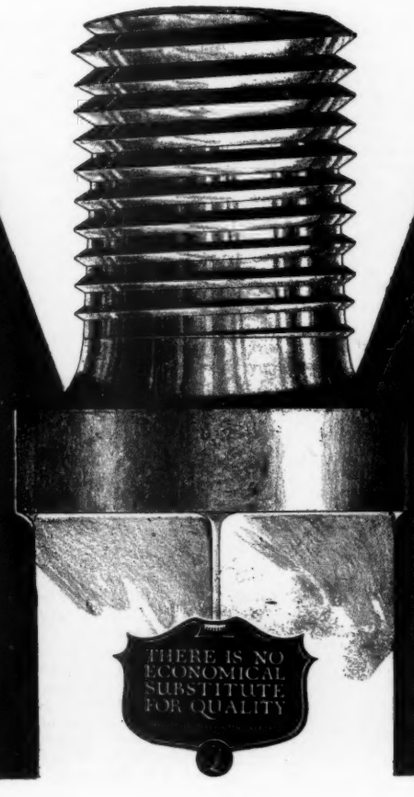


Late Fields

(Continued from Page 39)

bbls.; No. 3, 4,980 bbls.; Independent and Atlantic's No. 1, 1,805 bbls.; total for eight wells, 25,550 bbls.

MEXICO

TAMPICO, Mex., Apr. 19. — Huasteca Petroleum Co. scored a 20,000-bbl. well in the south fields this week when its No. 75 Cerro Azul finished for that flush production at a subsea level of 1,393 feet. Down in Tierra Blanca its No. 64 finished for 1,000 bbls. at 1,989 feet.

GULF COAST

HOUSTON, Tex., Apr. 20.—Gulf Production Co.'s No. 22 Hager fee in the Orange Pool, is flowing 2,000 bbls. at 4,800 feet and No. 3 Hager, deepened to 4,950 feet, is a salt water well.

In the Hull Pool, the Mecom Oil Co.'s No. 8 Taylor will make a 200-bbl. pumper at 3,760 feet.

KANSAS

In Lyon County, about 3 miles north of the Pixlee Pool, Sheedy and others had 1,800 feet of oil in their No. 1, C NW NW SE, Section 19-21-10, following a 60-quart shot. Sand was from 2,185-99 feet, total depth 2,255 feet and plugged back to the bottom of the sand. On the east side of the same township, the Super-Six Oil Co.'s No. 2, C S half SE, Section 24-21-10, was completed for 250 bbls. naturally from sand at 2,588-2,600 feet. McCullouch's No. 2, C NW NE NW, Section 25-21-10, was good for 990 bbls. naturally from sand at 2,592-96 feet. The Transcontinental Oil Co.'s No. 2, C SW SE SW, Section 30-21-10, was shot with 60 quarts and made 375 bbls. afterward from sand at 2,143-86 feet, total depth being 2,187 feet. The same company had a rig on the ground for No. 3 Atyeo, C SE SW SW, Section 30, and another rig for No. 1, C NW NE NW, Section 31-21-10. In this same section, Sheedy's No. 4, C NE SE SW, filled up 1,000 feet in 8 hours from sand at 2,243-99 feet. Ritchie & Moore were drilling their No. 6, C SE SW, Section 34-21-10, at 983 feet.

In the next township east, Fisher, Locke & Moore were drilling their No. 1, C SW NW SW, Section 11-12-11, at 700 feet. Rhodes & Parkins were drilling at 415 feet in their No. 1, C NE NW SE, Section 3-21-11.

In the Madison district, the Phillips Petroleum Co. was drilling No. 9, C SE SE SW, Section 33-21-12, at 480 feet.

Just south of Neosho Rapids, in the east central part of Lyon County, Bailliere and others were drilling their No. 1, SE cor. NE, Section 33-19-13, at 1,000 feet.

Northwest of Emporia, Ritchie & Moore had a rig on the ground for No. 1 Bendes, C NW NW NE, Section 32-18-10.

The Double A Oil Co. was drilling at 400 feet in No. 1, C SE SE NW, Section 11-17-12. Ramsey was shut down at 212 feet in his No. 1, C SW SW NE, Section 21-16-10.

In Coffey County, the Kimbley Petroleum Co. was drilling its No. 1 Brandley, C SE SE SE, Section 18-21-14, at 500 feet.

In the Lucas district of Butler County, the Cowpunchers Oil Co. spudded No. 3, C N half NE SE, Section 30-26-8.

In northern Butler County, the Manhattan Oil Co. was drilling No. 1, C NE NE NE, Section 29-24-7, at 700 feet.

The Greenland Oil Co. and others abandoned their No. 1, C NW NE SE, Section 12-25-6, as dry at 2,835 feet.

In the El Dorado Pool, the Empire Gas & Fuel Co.'s No. 87 Hegburg, C SE NW NW, Section 28-25-5, was drilling at 200 feet.

The Texas Company spudded No. 3, C SW SE SW, Section 22-27-7, and the Mid-Kansas Oil & Gas Co. was drilling at 300 feet in No. 1, C SW SW NW, Section 23-27-7. The Dixie Oil Co. had a rig on the ground for No. 3 Truesdale, C SW NE SW, Section 27-27-7. The Greenland Oil Co.'s No. 4, C SE SE NE, Section 28-27-7, had 800 feet of oil in the hole from sand at 2,715-52 feet, and No. 5, CEL NE SE SE, had 2,000 feet of oil in the hole from sand at 2,695-2,735 feet. Neither one was completed.

John Rodgers' No. 6, CSL NE NE, Section 33-27-7, was drilling at 450 feet, and a rig was up for No. 7 Laughlin, C NW SE NE, same section. The Lewis Oil Co. shot No. 2 Laughlin, CEL SE NW NE, Section 33-27-7, with 60 quarts and made it a 65-bbl. well from sand at 2,713-45 feet. The Dixie Oil Co. was rigging up No. 1 Smith, C NW SE SW, Section 34-27-7.

West of the Fox-Bush Pool, in southern Butler County, Shawver and others spudded No. 1, C SW SW NE, Section 19-29-5.

In Elk County, the Wichita Topeka Oil Co. abandoned its No. 1 Hawkins, C SW SW, Section 34-29-12, as dry at 1,952 feet.

The Theta Oil Co.'s No. 1 Waller, C NW NW NW, Section 26-31-10, which was a 25-bbl. well at 1,348-60 feet, was drilling deeper at 1,600 feet. The Neely Oil & Gas Co.'s No. 1, C SE SE NW, Section 29-31-10, was dry and abandoned at 2,176 feet.

NORTH CENTRAL TEXAS

FORT WORTH, Tex., Apr. 20.—Magnolia Petroleum Co.'s No. 1 University, Crane County, when put on the pump, made 7½ bbls. in 15 minutes, then turned to water. The origin of the water is undetermined.

Roeser & Pendleton's No. 1 Cook B, Shackelford County, is estimated at 800 bbls. at 1,235 feet. No. 3 Cook A is drilling at 1,400 feet and apparently missed the sand.

NORTH CENTRAL TEXAS

(Continued from Page 39)

No. 1 Johnson, 1,000,000 feet of gas at 3,230 feet; Root and others' No. 1 Luse, 20 bbls. at 3,656 feet.

Coleman County

Canyon Oil & Gas Co.'s No. 1 Parsons, dry at 1,950 feet; Magnolia Petroleum Co.'s No. 15 Morris, dry at 3,497 feet; Midwest Exploration Co.'s No. 1 Dibrell A, 226 bbls. at 1,942 feet.

Brown County

Barkley & Conway's No. 3 Dunn, 80 bbls. at 1,136 feet; Gray and others' No. 5 Dunn, 500 bbls. at 1,126 feet, and No. 1 Lewis, dry at 1,773 feet; J. K. Hughes Development Co.'s No. 3 Arledge, 200 bbls. at 1,298 feet; Humble Oil Co.'s No. 5 Dunn, 240 bbls. at 1,132 feet; Inglewright, has abandoned the location for No. 2 Eubanks; Landreth Oil Corp.'s No. 1 Prather, dry at 1,335 feet; McLester Oil Co.'s No. 3 Wooldridge, 75 bbls. at 1,225 feet; Moorman and others' No. 1 Byrd, 200 bbls. at 1,322 feet; States Oil Corp.'s No. 3 Allen A, 4,000,000 feet of gas and 40 bbls. oil at 1,118 feet. The Texas Company's No. 2 Dunn, 300 bbls. at 1,141 feet; No. 4 Dunn, 300 bbls. at 1,141 feet; Hynes & Deininger's No. 1 Means, dry at 1,340 feet; Western Oil Sales Co.'s No. 1 Smith, dry at 1,607 feet.

Tom Greene County

Penn & Windsor's No. 1 H. Turner, dry at 3,401 feet.

Reagan County

Big Lake Oil Co.'s No. 51 University, 3,468 bbls. at 2,886 feet.

Upton County

Independent Oil & Gas Co.'s No. 1 Burleson, 10 bbls. at 2,231 feet, and No. 1 Taylor is still flowing 110 bbls. at 2,045 feet.

Crane County

Magnolia Petroleum Co.'s No. 1 University, 90 bbls. at 3,030 feet.

Crockett County

Humble Oil Co.'s No. 1 Sarg, 1 bbl. per day at 2,680 feet.

North Texas Production Report for Week Ending April 15, 1926

Electra	
Atlantic Oil Prod. Co.	62
Empire Gas & Fuel Co.	722
Gulf Production Co.	973
Humble Oil & Ref. Co.	90
Magnolia Petroleum Co.	3,177
Panhandle Refining Co.	23
Phillips Petroleum Co.	16
Prairie Oil & Gas Co.	115
Rio Bravo Oil Co.	538
The Texas Company	3,416
Texhoma Oil & Ref. Co.	1,519
Miscellaneous	6,359
Total	17,010
Burkburnett	
Gulf Production Co.	445
Humble Oil & Ref. Co.	330
Magnolia Petroleum Co.	2,652
Panhandle Refining Co.	240
Prairie Oil & Gas Co.	10
Sinclair Oil & Gas Co.	46
Skelly Oil Co.	150
The Sun Co.	60
The Texas Company	368
Texhoma Oil & Ref. Co.	578
Miscellaneous	7,472
Total	12,351
Iowa Park	
Atlantic Oil Producing Co.	105
Gulf Production Co.	120
Humble Oil & Ref. Co.	177
Magnolia Petroleum Co.	450
Panhandle Refining Co.	20
Roxana Petroleum Corp.	9
Simms Oil Co.	6
The Texas Company	252
Texhoma Oil & Ref. Co.	190
Miscellaneous	3,154
Total	4,482
Wilbarger County	
Atlantic Oil Producing Co.	110
Gulf Production Co.	39
Humble Oil & Ref. Co.	3,652
Phillips Petroleum Co.	4,100
Prairie Oil & Gas Co.	73
Roxana Petroleum Corp.	450
The Texas Company	36
Texhoma Oil & Ref. Co.	105
Miscellaneous	5,517
Total	14,082
Archer County	
Atlantic Oil Producing Co.	300
Cosden & Co.	537
Empire Gas & Fuel Co.	697
Gulf Production Co.	3,249
Humble Oil & Ref. Co.	746
Independent Oil & Gas Co.	20
Magnolia Petroleum Co.	1,460
Marland Oil Co.	430
Panhandle Refining Co.	129
Phillips Petroleum Co.	806
Barnsdall Oil Co.	1,230
Prairie Oil & Gas Co.	2,391
Roxana Petroleum Corp.	378
Simms Oil Co.	498
The Sun Co.	218
The Texas Company	3,454
Texhoma Oil & Ref. Co.	3,790
Tidal Oil Co.	55
Miscellaneous	14,269
Total	34,657
Montague County	
Gulf Production Co.	69
The Texas Company	321
Texhoma Oil & Ref. Co.	600
Miscellaneous	1,200
Total	2,190
Young County	
Gulf Production Co.	291
Humble Oil & Ref. Co.	297
Magnolia Petroleum Co.	190
Mid-Kansas Oil Co.	12
Panhandle Refining Co.	133
Phillips Petroleum Co.	6
Prairie Oil & Gas Co.	12
Rio Bravo Oil Co.	132
Simms Oil Co.	890
Sinclair Oil & Gas Co.	352
The Sun Co.	60
The Texas Company	512
Texhoma Oil & Ref. Co.	317
Tidal Oil Co.	182
Miscellaneous	3,673
Total	7,059
Shackelford County	
Empire Gas & Fuel Co.	25
Humble Oil & Ref. Co.	325
Magnolia Petroleum Co.	70
Phillips Petroleum Co.	715
Prairie Oil & Gas Co.	10
The Texas Company	225
Texhoma Oil & Ref. Co.	70
Miscellaneous	1,670
Total	3,110
Stephens County	
Arkansas Fuel Oil Co.	25
Empire Gas & Fuel Co.	30
Gulf Production Co.	1,312
Humble Oil & Ref. Co.	686
Magnolia Petroleum Co.	375
Mid-Kansas Oil Co.	2,425
Phillips Petroleum Co.	435
Prairie Oil & Gas Co.	850
Republic Production Co.	130
Roxana Petroleum Corp.	65
Simms Oil Co.	35
Sinclair Oil & Gas Co.	75
The Sun Co.	150
The Texas Company	1,020
Texas & Pacific Coal & Oil Co.	1,130
Miscellaneous	4,825
Total	13,567
Ranger	
Arkansas Fuel Oil Co.	5
Gulf Production Co.	248
Humble Oil & Ref. Co.	30
Magnolia Petroleum Co.	805
Mid-Kansas Oil Co.	135
Panhandle Refining Co.	130
Prairie Oil & Gas Co.	576
Republic Production Co.	45
Simms Oil Co.	315
The Texas Company	150
Texas Pacific Coal & Oil Co.	715
Miscellaneous	2,180
Total	5,333
Grand total	113,841

Drilling Report—Archer County

Shasta Oil Co.'s No. 1 Ferguson, drilling at 1,950 feet; No. 13 Mangold, at 786 feet; Texhoma Oil & Refining Co.'s No. 9 Hamilton, at 1,050 feet; Anderson and others' No. 1 Wilson, at 1,274 feet; Consolidated Oil Co.'s No. 1 Taylor, at 350 feet; Howell and others' No. 1 Brown, at 550 feet; Kollatt and others' No. 5 White, at 1,475 feet; Lewis and others' No. 1-B Thompson, at 1,525 feet; Maer and others' No. 1 Prescott, at 1,502 feet; Magnolia Petroleum Co.'s No. 1 McCrory, at 2,278 feet; No. 4-B Ruty, at 505 feet; Norwood and others' No. 2 Rutty, at 1,136 feet; Phillips and others' No. 1 Lyles, at 465 feet; Riner and others' No. 1 Preston, at 1,426 feet; Shappell and others' No. 2-A Wilson, at 1,629 feet; Simms Oil Co.'s No. 1-A Turbeville, at 735 feet; The Texas Company's No. 1-B Dycus, at 1,358 feet; Texhoma Oil & Refining Co.'s No. 3-A Parrish, at 1,426 feet; Tidal Oil Co.'s No. 1 Griffin, at 1,895 feet; Wanderer Oil Co.'s No. 1 Turbeville, at 475 feet; White Eagle Oil Co.'s No. 2 Marcell, at 475 feet; Whittkin and others' No. 1 McCrory, at 1,475 feet; Wright and others' No. 4 Miller, at 450 feet; Camp Oil & Gas Co.'s No. 4 Rachuig, at 1,050 feet; Carter and others' No. 5 Cowan, at 1,075 feet; Cosden and others' No. 5-A Oldham, at 1,125 feet; No. 1-C Oldham, at 550 feet; Golding and others' No. 1 Lauster, at 825 feet; Gwynn and others' No. 1 Echols, at 400 feet; Hammond and others' No. 1 Richardson, at 975 feet; Hopper and others' No. 1 Robinson, at 425 feet; Humble Oil & Refining Co.'s No. 3 Wolf, at 375 feet; No. 4 Wolf, at 1,125 feet; Magnolia Petroleum Co.'s No. 2 Lauster, at 1,290 feet; No. 8 Rogers, at 775 feet; Murchison and others' No. 1 Pace, at 995 feet; Pandem Oil Corp.'s No. 1 Coffield, at 1,025 feet; Primrose Petroleum Co.'s No. 8 Wolf, at 1,475 feet; Prairie Oil & Gas Co.'s No. 3 Kovar, at 750 feet; Shaw and others' No. 1 Prideaux, at 500 feet; Sun Oil Co.'s No. 1 Brown, at 750 feet; The Texas Company's No. 7 Jeske, at 1,175 feet; No. 9 Jeske, at 475 feet; No. 10 Jeske, at 800 feet; No. 1 Key, at 1,075 feet; No. 8 Richardson, at 1,250 feet; No. 1 Wright, at 1,300 feet; Texhoma Oil & Refining Co.'s No. 2 Abercrombie, at 800 feet; No. 15 Oldham, at 1,400 feet; No. 16 Oldham, at 1,250 feet; Tidal Oil Co.'s No. 1 Terrell, at 800 feet.

Young County

Booth Oil Co.'s No. 2 Graham, at 675 feet; Bridwell and others' No. 1 Beardon, at 800 feet; No. 5 Farmer, at 900 feet; Cook and others' No. 1 Keen, at 750 feet; Gwynn and others' No. 1 Winkler, at 825 feet; Humble Oil & Refining Co.'s No. 10 Mercer, at 900 feet; Whitehead and others' No. 2 Belknap Coal Co., at 4,675 feet; Wilson and others' No. 7 Beardon, at 825 feet; Dyer and others' No. 1 Costello, at 1,200 feet; Hubbard Drilling Co.'s No. 1 Harrison, fishing for casing at 2,780 feet; No. 1 Hunt, drilling at 1,800 feet; Humphreys Oil Corp.'s No. 1 Griffin, at 450 feet; Nash and others' No. 3-B Williams, at 1,400 feet; No. 1 Wergess, at 775 feet; Phillips Petroleum Co.'s No. 2 Corbett, at 3,390 feet.

Shackelford County

Amerada Petroleum Corp.'s No. 1 Cook, drilling at 900 feet; Buckeye Pipe & Supply Co.'s No. 1 Black, at 1,050 feet; Dunnaway and others' No. 2 Elliott, at 400 feet; Dunbar and others' No. 1 Matthews, at 900 feet; Hope Petroleum Co.'s No. 1 Davis, at 1,100 feet; J. K. Hughes Development Co.'s No. 1 Myer, at 750 feet; McCrea and others' No. 1 Davis, at 725 feet; Magnolia Petroleum Co.'s No. 1 Midkiff, at 850 feet; Melton Oil Co.'s No. 1 Edwards, fishing at 1,290 feet; Milham Corporation's No. 1 Sedwick, at 2,725 feet; No. 1 Willie, at 450 feet; Overly and others' No. 1 Stevens, at 325 feet; Phillips Petroleum Co.'s No. 9 Lynch, at 380 feet; Roeser & Pendleton's No. 1-A 81 Cook, at 925 feet; No. 3-A 85 Cook, at 1,280 feet; No. 1-B 85 Cook, at 975 feet; Simms Oil Co.'s No. 1 Myrick, underreaming at 1,050 feet.

Stephens County

Benson Drilling Co.'s No. 3 Bell, underreaming at 725 feet; Interstate Consolidated Oil Co.'s No. 3 Lee, drilling at 1,600 feet; Kenridge Oil Co.'s No. 1 Coody, at 1,700 feet; Mid-Kansas Oil & Gas Co.'s No. 4 Hill, at 1,025 feet; Mid-Tex Oil Co.'s No. 5 Cunningham, at 1,100 feet; No. 3 Morrison, at 2,450 feet; No. 1 Vick, at 500 feet; Rhodes and others' No. 4 Crowley, at 575 feet; Swensondale and others' No. 1-B Echols, at 3,574 feet; Barnhart and others' No. 1 Bradford, fishing at 3,605 feet; Brown & Co.'s No. 3 Aiken, drilling at 1,425 feet; Federal

Oil Co.'s No. 1 Gratz, at 2,725 feet; Hanlon Gasoline Co.'s No. 1 Curry, at 2,675 feet; No. 2 Curry, at 2,640 feet; Hughes and others' No. 5 Gandy, at 2,275 feet; Humble Oil & Refining Co.'s No. 2 Yoes, at 1,750 feet; Landreth Production Co.'s No. 2 Akin, at 1,150 feet; Lauderdale and others' No. 1 Sikes, at 3,500 feet; Meredith and others' No. 1 Chelsey, at 1,300 feet; Reeves and others' No. 1 Tolle, fishing at 1,180 feet; Robert Oil Co.'s No. 1 Thorpe, at 700 feet; Swensondale Oil Co.'s No. 32 Swenson, at 1,900 feet; No. 1 Taylor, at 925 feet; Texas Pacific Coal & Oil Co.'s No. 63 Binney, at 625 feet; No. 64 Binney, at 1,250 feet; No. 1 Hancock, at 400 feet; No. 3-B Winston, at 800 feet; The Texas Company's No. 12 Curry, at 3,200 feet.

Eastland County

Barker and others' No. 1 Butler, drilling at 1,300 feet; Corzelius Brothers' No. 1 Cooper, fishing at 3,150 feet; Eastland Oil Co.'s No. 1 Armstrong, drilling at 1,200 feet; Kirk and others' No. 1 Blackwell, at 2,700 feet; Lewis and others' No. 1 Schmick, at 925 feet; Lobough and others' No. 1 Casey, at 1,825 feet; Prairie Oil & Gas Co.'s No. 2 Brelsford, at 3,375 feet; Teatsworth and others' No. 9 Scott, at 400 feet; Texas Pacific Coal & Oil Co.'s No. 26 Butler, at 3,400 feet; Bateman and others' No. 1 Mulloy, at 2,825 feet; Corzelius Brothers' No. 1 Poe, at 2,563 feet; McBride and others' No. 1 Johnson, at 2,750 feet; Rumbaugh and others' No. 1 White, fishing at 1,650 feet; Simons and others' No. 1 Morgan, underreaming; The Texas Company's No. 1 Noble, drilling at 500 feet.

Coleman County

Burke and others' No. 1 Dibrell, drilling at 1,775 feet; Curtis and others' No. 1 Sealy, at 375 feet; Evans and others' No. 1 Walker, at 1,625 feet; Independent Oil & Gas Co.'s No. 1 Dibrell, at 550 feet; Mid-Kansas Oil & Gas Co.'s No. 1 Dibrell, at 950 feet; Moore and others' No. 1 Morris, at 1,725 feet; Owen and others' No. 1 Baker, at 2,200 feet; Pennant Oil & Gas Co.'s No. 1 Neeb, at 1,350 feet; Superior Oil Corp.'s No. 1 Helton, at 1,625 feet; White Eagle Oil & Refining Co.'s No. 1 Dibrell, at 450 feet; Howard Petroleum Co.'s No. 1 Stearns, at 1,200 feet; Ross and others' No. 1 Haygood, fishing at 1,390 feet; No. 1 Sweardson, drilling at 400 feet; Wright and others' No. 1 Starr, at 725 feet.

Brown County

Anderson and others' No. 1 Williams, drilling at 2,750 feet; No. 1 Algood, at 500 feet; No. 1 Clark, at 2,775 feet; Barbour Oil Co.'s No. 4-A Prather, at 1,125 feet; Barkley and others' No. 6 Dunn, fishing at 780 feet; Carter and others' No. 1 Stapp, drilling at 1,275 feet; Conway Brothers' No. 6 Chambers, at 750 feet; No. 4 Pickett, at 925 feet; Cosden and others' No. 8 Westerman, at 750 feet; Curry and others' No. 1 Pickett, at 450 feet; Denny and others' No. 1 Cason, at 2,125 feet; Douglas and others' No. 1 Graham, fishing at 1,135 feet; Gibson Oil Corp.'s No. 1 Carmichael, at 425 feet; Gillespie and others' No. 2 Newton, at 1,350 feet; No. 3 Newton, at 400 feet; Gilman and others' No. 9 Chambers, at 1,150 feet; No. 4 Thompson, at 400 feet; Hepburn Oil Co.'s No. 1 Gaines, at 1,350 feet; J. K. Hughes Development Co.'s No. 4 Arledge, at 375 feet; Humble Oil & Refining Co.'s No. 7 Dunn, at 625 feet; No. 8 Dunn, at 275 feet; No. 9 Dunn, at 450 feet; No. 2 Hodnett, fishing at 1,350 feet; McCarter and others' No. 3 Allen, drilling at 1,075 feet; No. 4 Allen, at 450 feet; McLester Oil Co.'s No. 6 Clark, at 1,075 feet; Mahlstedt Oil Co.'s No. 1 Eubanks, at 925 feet; Milham Corp.'s No. 1 Eddington, at 1,250 feet; Mims and others' No. 1 Nations, at 375 feet; Mulloy and others' No. 1 Newton, at 500 feet; Prairie Oil & Gas Co.'s No. 14 Gaines, at 750 feet; Prairie Oil & Gas Co.'s No. 1 Turner, at 1,750 feet; Root and others' No. 1 Suttles, at 475 feet; No. 1 Buzbee, at 1,050 feet; Schaffner and others' No. 9 Prather, at 975 feet; Shadbolt and others' No. 1 Lewis, at 1,425 feet; Simms Oil Co.'s No. 7 Gaines, at 525 feet; T. B. Slick's No. 3 Starr, at 2,700 feet; E. L. Smith Oil Co.'s No. 2 Dunn, at 825 feet; No. 3 Dunn, at 650 feet; No. 4 Dunn, at 525 feet.

ENGINEER FIRMLY ESTABLISHED IN OIL SAYS GEORGE S. DAVISON

George S. Davison of Pittsburgh, Pa., president of the Gulf Refining Co., and president of the American Society of Civil Engineers, visited several Mid-Continent and Gulf Coast cities in the past week where he met and was entertained by local engineering chapters.

George T. Seabury, secretary of the society, has been on a visiting trip which has taken him into many western states in order that he might get acquainted with western engineers and obtain their point of view, and following the recent convention of the society in Kansas City he prevailed upon the president, Mr. Davison, to accompany him on his trip through the Mid-Continent oil country.

In Tulsa Mr. Davison and Mr. Seabury were met by a reception committee from Tulsa Chapter of the American Association of Engineers and the visitors were guests of the local chapter while in this city.

At a dinner given at the Hotel Mayo Saturday evening Mr. Davison made a short address in which he told of the development of the engineer in the oil business. Even so recently as 20 years ago the engineer was a new element in the oil business and not always a welcome one. The pioneer had to combat the prejudice of the "practical" self-trained men of the day, many of whom looked upon the trained engineer as "all style and no action."

By merit alone the engineer made progress and in time was universally accepted as a valuable addition to the technical personnel of the industry.

Mr. Davison himself entered the oil business in the Texas fields over 20 years ago in connection with the building of

George S. Davison

pipe lines and he made the surveys for the Gulf Pipe Lines in Texas and the long line from the Glenn Pool in Oklahoma to the Gulf Coast, which was finished and through which oil was run in 1907. In his address Mr. Davison briefly sketched the benefits to the oil industry which had grown out of the work of well-trained engineers in the production, transportation and refining branches of the business. The place of the engineer now is thoroughly established, he said, and many of them who began in somewhat humble positions have been advanced to high executive posts. The young engineer is to be found now in nearly every branch of the oil business. He is in the scouting, leasing and land, production, pipe line and refining departments and his training has a progressive influence on the work being done wherever he is present.

Other engineers spoke at the meeting, including Webster L. Benham of Kansas City, Mo., former president of the American Association of Engineers; George T. Seabury, secretary of the American Society of Civil Engineers; J. M. Howe of Houston, a director of the society for the State of Texas; E. J. Mehren, vice president of the McGraw-Hill Publishing Co., and Luther H. White, Tulsa geologist.

Mr. Davison and Mr. Seabury left for Dallas Sunday and later visited Houston, after which they returned East.

The American Society of Civil Engineers is the oldest engineering body in America, and one of the largest technical organizations in the werld. It was established about 80 years ago in the East and it has been only since the development of the Mid-Continent and Far West in recent years, that it has spread generally through the United States. Mr. Davison and Mr. Seabury's visits are expected to bring the East and West closer together and to increase the influence of the western engineer in connection with the general policies of the organization.

AIRPLANE VIEW OF CRUDE OIL FIRE AT BREA, CALIF.

Two reservoirs of the Union Oil Co. Note the boiling over of one tank as shown on the left by the trail of smoke.

NEED WORKABLE COST ACCOUNTING SYSTEM FOR EFFICIENT OPERATION

P. S. Tarbox*
Manager, Independent Refining Co., Oil City, Pa.

It is very generally agreed that cost accounting is a real necessity in all major industries today, and if we have not investigated, we would be surprised at the amount of work the United States Chamber of Commerce has done along this line for a multitude of industries.

After discussing this subject with various refiners, we learn that in a large percentage of the smaller refineries and especially in the Pennsylvania Field, it is absolutely impossible to charge the various departments with raw or semi-finished materials and again credit them with the total production received from this particular department, and it is for this very reason that in the work that we have done along this line we have entirely ignored this, feeling certain that our monthly percentage charts will show us quickly any excess loss and feeling certain that in this case a strenuous effort is always put forth to locate the departments in which this loss occurred.

I personally do not feel that this should prevent our attempting to ascertain operating costs, eliminating in our consideration, these particular items and of course where it could be accomplished, surely it would be of value.

Another item that is difficult to determine in many plants, is storage and pumping expenses, this we have eliminated in our consideration, but we believe without incurring much expense that it is possible to arrive at a very accurate figure on steam costs and to make a reasonably accurate distribution to the various departments of the steam they use; based on the costs of boiler house pressure. And a month to month comparative cost in this department surely keeps everyone on his toes and is a real money saver.

Check on Lost Time

In still operations the accurate check of lost time is of immense value. You may feel that your superintendent is on the job every minute and when it is brought before you from month to month, you will soon find there are faults which can be corrected, and that you are going to be more vitally interested and more willing to listen to your men's suggestions. First, if you find that too much time is being consumed in charging and emptying reducing stills, with this information before you, you can determine more intelligently whether or not you would be justified in increasing the size of lines and pumps.

If you find your delays from brick work are large, you will surely attempt to find whether the trouble is in the laying or the brick themselves and will ultimately correct or at least improve this. If it is steel or piping ends this, too, is forced to your attention.

Again you have data which will determine for you very quickly combined yields from materials whether you are justified in rerunning some materials which may possibly occasion you a loss or in other words, would be more profitably disposed of in the residuum state.

Many refiners that a few years ago were making a large variety of different products are today making probably one-fifth as many grades. Whether this is wise or not you certainly are better able to determine if you wish to determine costs even though they may not be 100 per cent accurate.

Again the check on fuels from month to month is certainly valuable information, and it is my opinion that those who have adopted this practice have found many more things of real value.

Wax House Costs

Under the plan proposed it is a comparatively easy manner to determine wax house costs. You can base your costs on either the total throughput or against the products which values have been enhanced. In some instances, to our knowledge, the costs of operating wax house are based on finished wax, finished neutrals, and other finished products. With this information, one is certainly better able to determine the price that he can pay for wax distillates providing his capacity in this department is greater than the crude run will supply.

In filter houses we have a very vexing problem in that numerous grades are run at the same time by the same force but by keeping accurate records of the number of filters of each new, first, second, etc., burns, comparing it at the end of the period with the products actually manufactured you can arrive at a fairly accurate cost of filtering each product.

Possibly those who have never calculated their filtering expense will find many surprises. It has been determined in some instances that 50 per cent of the filtering costs are in restoring the filtering medium and only about 25 per cent in the cost of the clay or earth, and the other filtering department costs are only about 25 per cent.

During 1925, I think the margin between the price of 600 S. R. and 600 Oil City E. averaged about 2 cents per gallon, and personally I doubt if the average Pennsylvania refiner can filter his 600 S. R. to Oil City E at a cost of less than 4 cents and in many instances the actual cost is in excess of this amount.

Again the cost of filtering neutrals in our minds is not as great as the variation in price between the various colors would indicate. This necessarily does not apply to medium and heavy automobile oils. Those of use who have been guessing at the cost of filtering kerosene I believe have a surprise in store when we are able to arrive at actual costs, and your committee feels that these are questions worthy of your serious consideration.

Your committee advises that it is quite universal among all operating cracking plants to determine actual costs possibly for the reason that formulas were given us or we worked out formulas at the time the plant was started. If this is valuable information in this department why is not the same information pertaining to other departments equally as valuable? If we would each attempt to determine departmental costs and could through some central sources, without each knowing where the information came from, determine whether our costs were above or below or on the average, it would certainly give each of us an opportunity not only to determine where we are efficient, or an opportunity to determine where we are inefficient, which certainly would be valuable information.

Many refiners who have marketing departments feel the importance and do check marketing costs very closely. I wonder if you can conceive of any reason why this is more important than determining refinery costs.

Your committee does not claim to be experts in cost accounting but feels the necessity of some one making a start, and we recognize full well that there is going to be vast improvements in the methods we suggest and earnestly solicit constructive criticism and cooperation in the hope that ultimately all may profit.

*National Petroleum Association, Cambridge Spring, Pa., April 15 and 16.

N. P. A. APPROVES STANDARD FOR TESTS

(Continued from Page 148)

Illuminating Oils.

A quantitative determination of total sulphur.

A. S. T. M. Serial Designation D90-24T.

B. M. Technical Paper No. 323A—pages 81-83.

10. Viscosity of Heavy Fuel Oils, Road Oils and Asphaltic Fluxing Oils.

Saybolt Furol Viscosimeter.

A. S. T. M. Serial Designation D88-24T.

B. M. Technical Paper No. 323A—pages 39-42.

11. Calorific Value Determination on Oils Used for Fuel.

A Bomb Calorimeter shall be used, according to the best practices of manipulation and computation.

12. Distillation Method for Gas Oils, Etc.

A. S. T. M. Serial Designation 158-25T.

13. Determination of Water in Petroleum Products.

Distillation Method.

A. S. T. M. Serial Designation D95-24.

B. M. Technical Paper No. 323A—pages 67-70.

14. Determination of Water and Sediment by Means of Centrifuge.

A. S. T. M. Serial Designation D96-24.

B. M. Technical Paper No. 323A—pages 70-72.

15. Determination of Total Sulphur in All Oils Except Gasoline, Naphtha and Kerosene.

This is the Oxygen Bomb Method.

A. S. T. M. Serial Designation D129-22T.

B. M. Technical Paper No. 323A—pages 84-85.

16. Color of Lubricating Oils.

N. P. A. Color.

A. S. T. M. Serial Designation D155-23T.

B. M. Technical Paper No. 323A—pages 33-36.

17. Viscosity of Lubricating Oils.

A. S. T. M. Serial Designation D88-25T.

B. M. Technical Paper No. 323A—pages 39-42.

18. Flash and Fire Points of Lubricating Oils.

A. S. T. M. Serial Designation D92-24.

B. M. Technical Paper No. 323A—pages 61-64.

19. Carbon Residue.

Conradson Carbon Residue.

A. S. T. M. Serial Designation D189-24T.

B. M. Technical Paper No. 323A—pages 79-80.

Note: The Federal Specifications Board Method differs from the A. S. T. M. method in that the A. S. T. M. method provides for a sample of 10 gm. in all cases, while the F. S. B. method requires:

10 gm. sample when Carbon Residue below 1.5 per cent.

5 gm. sample when Carbon Residue between 1.5 and 3 per cent.

2 gm. sample when Carbon Residue above 3 per cent.

The Federal Specifications Board Test in Bulletin 323A is to be considered as "standard" by this association.

20. Cloud and Pour Points.

A. S. T. M. Serial Designation D97-25T.

21. Free Acid in Lubricating Oils—Neutralization Number.

A. S. T. M. Serial Designation D188-25T.

B. M. Technical Paper No. 323A—pages 80-81.

22. Precipitation Number (Tar Test)

A. S. T. M. Serial Designation D91-21T.

B. M. Technical Paper No. 323A—pages 73-75.

23. Detection of Free Sulphur and Corrosive Sulphur Compounds.

A qualitative test only.

The copper strip for gasoline, naphtha and kerosene.

A. S. T. M. Serial Designation D130-22T.

B. M. Technical Paper No. 323A—page 86.

24. Pensky-Martens Closed Cup Flash

A. S. T. M. Serial Designation D93-22.

B. M. Technical Paper No. 323A—pages 55-61.

Note: The Pensky-Martens Closed Flash is not recommended for lubricating oils, most especially all cylinder stocks.

25. Saponification Number.

A. S. T. M. Serial Designation D94-21T.

B. M. Technical Paper No. 323A—pages 87-88.

26. Melting Point of Paraffin Wax.

A. S. T. M. Serial Designation D87-22.

B. M. Technical Paper No. 323A—pages 42-45.

Note: The "A. S. T. M. Paraffin Wax Melting Point" is essentially the same as the "English Melting Point." The so-called "American Melting Point" is an arbitrary figure 3 degrees Fahrenheit higher than the A. S. T. M. Paraffin Wax Melting Point.

27. Temperature Measurements in All Oil Tests.

Make certain that the thermometers used comply exactly with the thermometers specified in the test methods.

Test all thermometers for accuracy when they are first received; and frequently re-check Open Cup Flash, Pensky-Martens High Range and Distillation Thermometers.

Do not use "cheap" thermometers.

Where no thermometer is specified in the test method, use one graduated for the proper immersion, or make emergent stem corrections, or use any other means to secure true and accurate temperature measurement. Where the thermometer is specified, emergent stem errors, if any, become an experimental constant of the test method and therefore, are not to be taken into consideration.

28. Melting Point of Petrolatum.

A. S. T. M. Serial Designation D127-24T.

B. M. Technical Paper No. 323A—pages 45-46.

Note: The melting point of petrolatum is not a definite physical property, like the melting point of paraffin wax, and is, therefore, not capable of being determined with a very high degree of reproducibility. Different laboratories should check one another by 2 degrees Fahrenheit, which is as good reproducibility as may be expected by this (or any other) method.

Color of Petrolatum.

A. S. T. M. Serial Designation D218-25T.

29. Grease Analysis.

A. S. T. M. Serial Designation D128-24T.

30. Penetration of Grease.

A. S. T. M. Serial Designation D217-25T.

31. Emulsification and Demulsibility of Lubricating Oils.

A. S. T. M. Serial Designation D157-23T.

B. M. Technical Paper No. 323A—pages 75-77.

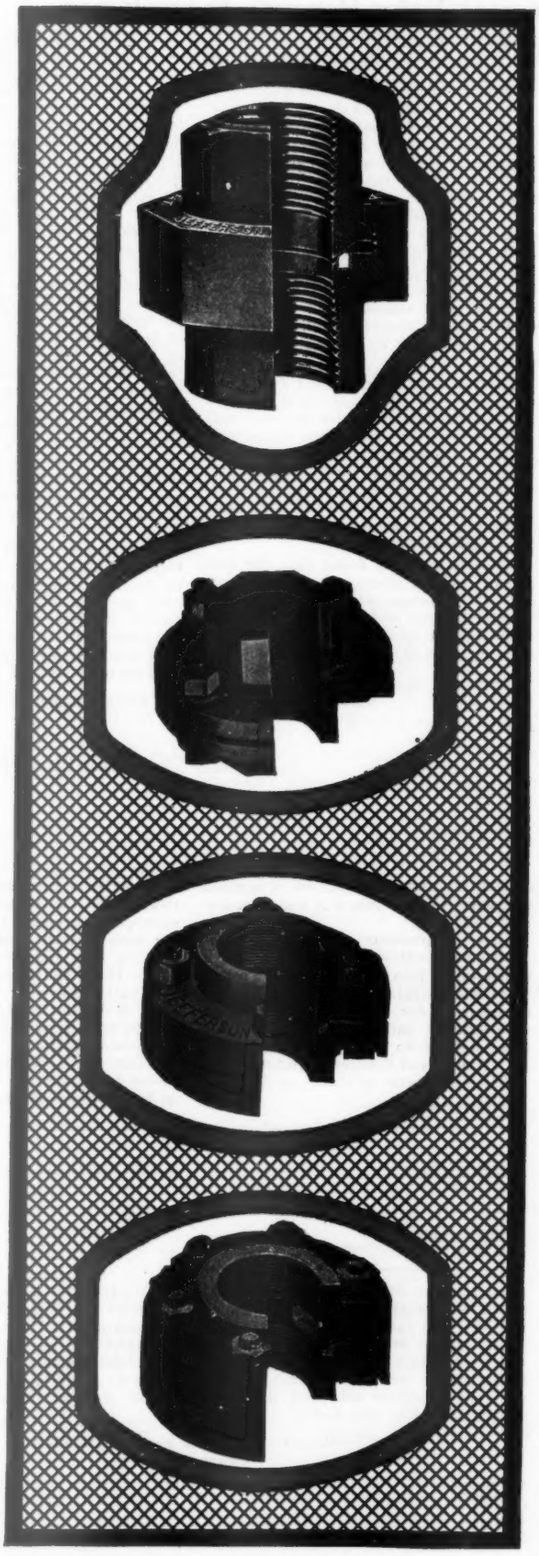
Phillips Petroleum Stockholders Visit Company's Holdings

Directors of the Phillips Petroleum Co. and other stockholders paid a visit to the Kansas and Oklahoma properties of the company the past week. The party included men well known in upper financial circles, railroad executives, bankers and capitalists. President Frank Phillips and Vice President L. E. Phillips of Bartlesville, took charge of the party and gave them a sample of Oklahoma hospitality. In Tulsa they were entertained by R. P. Brewer, chairman of the board of directors of the First National Bank, at his home, where many prominent oil men and others met the visitors. The party left for Bartlesville early Tuesday. The annual meeting of the stockholders of the Phillips Petroleum Co. was held in that city Tuesday.

VENEZUELAN INTEREST BOUGHT BY ATLANTIC

The Atlantic Refining Co. has acquired a one-half undivided interest in all the Venezuela properties of the Andes Petroleum Corp., according to an announcement by Anthony Andujar, president of the latter concern.

The holdings in Venezuela of Andes Petroleum and its subsidiaries total more than 4,000,000 acres, making it the third largest oil land holder in that country. In Colombia, 750,000 acres are held by the company, thus making a total acreage of about 5,000,000. Andes Petroleum has authorized capital of 2,000,000 shares no par value, of which 1,667,570 shares are outstanding. The company has no bonds, preferred stock or bank loans.



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JEFFERSON Unions have become the most widely used Unions in the oil fields because they have precisely the features that oil men want:

Tightness and *long life,* by reason of (1) their high grade, air-refined malleable iron construction; (2) their non-corrosive, ground ball brass to iron joint, requiring no gasket; (3) the special JEFFERSON brass seating — so manufactured as to be practically one piece with the iron, and so located as to be secure at all times from becoming loosened or dislodged; and (4) the Briggs Standard Taper threads with which all JEFFERSONS are threaded.

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Determine Hydrocarbons in Gasoline

Practical Method of Separating Unsaturated, Aromatic, Naphthene and Paraffin Constituents on Which Anti-Knock Value Depends, Is Explained

By Gustav Egloff and Jacque C. Morrell*
Research Laboratories, Universal Oil Products Co., Chicago, Ill.

One of the difficult problems in hydrocarbon chemistry is the quantitative determination of the paraffin, unsaturated, naphthene and aromatic hydrocarbons in mixtures. Much study has been given to this problem in the laboratories of the world, but no systematic procedure has been devised.

The primary purpose of this investigation was to relate the percentage composition of these hydrocarbons to the antiknock properties of certain motor fuels. The analytical procedure is accurate enough to give practical information concerning the antiknock qualities of motor fuels and is adapted as a standard laboratory method of determining the series of hydrocarbons when in presence of each other.

A 500-cc charge of the motor fuel is distilled through a Hempel column containing glass beads until the temperature of the vapor at the top of the column is 210 Centigrade. The residue is discarded. This temperature is purely arbitrary, and any other may be used provided it is used throughout the analysis.

The 210 Centigrade fraction is treated with 80 per cent sulphuric acid, so that the volume ratio of acid to oil is 2.1. The mixture is agitated for 15 minutes, allowed to settle, and the acid layer separated. The volume of the oil layer is measured and the per cent decrease of this volume calculated on the basis of the 210 Centigrade fraction. This calculation gives the percentage of the unsaturated hydrocarbons that have dissolved in the acid layer as reaction products.

In the sulphuric acid absorption one is confronted with the overlapping effects of various concentrations of sulphuric acid upon the unsaturated and aromatic hydrocarbons. The acid has two effects on the unsaturated hydrocarbons — solution by reaction and polymerization. Therefore, the salient feature of the method is the selection of such a concentration of sulphuric acid as has no effect on the aromatic hydrocarbons but allows determination of the unsaturated hydrocarbons by this twofold effect. Experiments have shown that 80 per cent (by weight) sulphuric acid is without substantial effect on the pure aromatic hydrocarbons and, furthermore, does not react with those of the naphthene and paraffin series. Pure unsaturated hydrocarbons react with sulphuric acid of this concentration to form the sulphuric absorption products and polymers.

The acid-treated oil is washed with water, neutralized with a 10 per cent solution of sodium hydroxide, and then redistilled in the same apparatus until the vapor temperature in the Hempel column reaches 210 Centigrade. The volume of the residue of the second fractionation to 210 Centigrade is calculated as a percentage of the first 210 Centigrade fraction, and is the percentage of the unsaturated hydrocarbons that have been polymerized during the acid treatment. This, added to the percentage of unsaturated hydrocarbons dissolved by the sulphuric acid, gives the total percentage of unsaturated hydrocarbons in the original 210 Centigrade fraction of the motor fuel.

Aromatic Hydrocarbons

Into a graduated separatory funnel provided with a stopcock and enlarged stem are put 20 cc. of the second 210 Centigrade fraction obtained during the analysis of the unsaturated hydrocarbons and 50 cc. of nitrating mixture—nitric acid 25 per cent, sulphuric acid 58 per cent, and water 17 per cent—added slowly with stirring and cooling. This particular combination of nitrating mixture is important, as it permits nitration of the aromatic hydrocarbons so that the nitration products do not dissolve substantially in the acid sludge but separate as a distinct layer which can be readily determined.

This operation will require from 15 minutes to an hour, as great care must be taken that the temperature of the hydrocarbon mixture does not reach the point where side reactions that might cause explosion may occur. The reaction mixture is allowed to stand until no more gas is evolved. Usually a three-layer system forms—the acid layer at the bottom, an intermediate layer of nitro derivatives, and the oil layer on top. By multiplying the number of cubic centimeters of nitrated compounds by the factor 4.3 the percentage of aromatic hydrocarbons in the second 210 Centigrade fraction is obtained. From this the percentage in the original 210 Centigrade fraction is calculated.

Naphthenes

Naphthene hydrocarbons were determined by the aniline method of Tizard and Marshall,[1] which is based on the lowering of the temperature of complete miscibility of aniline and the paraffin by naphthenes.

The oil from the nitration treatment is washed with water and a 10 per cent solution of sodium hydroxide, and then thoroughly dried with calcium chloride. The aniline value is determined on this dried oil, which is a mixture of paraffin and naphthene hydrocarbons.

Ten cubic centimeters of freshly distilled aniline and an equal volume of the oil are placed in a test tube that is jacketed by a larger test tube. Into the smaller test tube are placed a termometer (calibrated in 0.1 Centigrade) and a stirring rod. The mixture is heated until the cloud disappears and the temperature read. The heating is continued until the solution is just above the cloud point and then allowed to cool until the cloudiness reappears. This cloud point can be read to 0.1 Centigrade.

The experiments of Tizard and Marshall[1] and also of subsequent workers indicate that, under the conditions of the test, the paraffin hydrocarbons are completely miscible with aniline at 70 Centigrade, and that the cloud point is depressed 0.3 Centigrade for each 1 per cent of naphthene hydrocarbons present. For example, if the cloud point of a paraffin-naphthene mixture is 55 Centigrade, which is 15 Centigrade below the temperature of complete solubility of paraffin hydrocarbons in aniline, dividing 15 Centigrade by 0.3 Centigrade, we find that the sample contains 50 per cent of naphthene hydrocarbons. This percentage must then be calculated back to the original 210 Centigrade fraction, in order to find the percentage of naphthenes in the original fraction.

The percentage of paraffin hydrocarbons in the original 210 Centigrade fraction is obtained by subtracting the sum of the percentages of unsaturated, aromatic, and naphthene hydrocarbons from 100.

Criticism of Method

As stated previously, the determination of unsaturated hydrocarbons by the sulphuric acid method depends on two factors, reaction solution and polymerization. The reaction solution determination is positive, as it depends upon direct measurement of the decrease in volume. The polymerization factor, however, when mixtures such as motor fuels are under consideration, is subject to the criticism that all the polymers formed may not be left in the bottom after redistillation of the mixture, but some may be present in the distillate. Comparison of the boiling point curves before and after acid treatment, and also other physical constants such as density and refractive index, will largely take care of this criticism.

Furthermore, in such mixtures there may be present ring compounds with unsaturated side chains which may be included in the unsaturated hydrocarbons when determined by the sulphuric acid method.

The nitrating mixture used in the determination of the aromatic compounds was selected because of its minimum solvent power for the nitro compounds formed. Unsaturated compounds in a mixture of aromatic hydrocarbons will react with this nitrating mixture and increase the volume of the layer of nitro compounds and hence give high results for aromatic hydrocarbons.

The writers have found that the volume of aromatic hydrocarbons is about 86 per cent (average of experiments with benzene, toluene and xylene) of the total volume of the nitro compounds formed by nitration, and this figure may be used to correct for any discrepancies, if applied to aromatic hydrocarbons of higher molecular weight.

There is probably some solubility of nitro compounds in the oil layer, which is not taken into consideration. Preliminary experiments show that the critical temperature for the cloud point varies with different paraffin hydrocarbons, and this point merits further investigation.

Analysis of Synthetic Mixtures

Three synthetic mixtures of Pennsylvania gasoline, toluene, amylenes and octylene were analyzed by the method described. The gasoline, containing only a small amount of aromatic hydrocarbons and a negligible quantity of unsaturated hydrocarbons, was washed first with 98 per cent sulphuric acid and then with sodium hydroxide and water.

Table I—Analysis of Synthetic Mixtures
(Figures Per Cent)

	I	II	III
Pa. Gasoline	75.0	66.8	60
Benzene	6.2	8.3	20
Toluene	6.3	8.3	20
Amylenes	8.8	11.6	
Octylene	3.7	5.0	

	Hydrocarbons Present	Hydrocarbons Found	Hydrocarbons Present	Hydrocarbons Found	Hydrocarbons Present	Hydrocarbons Found
Unsaturated	12.5	16.0	16.6	21.2	20.0	18.2
Aromatic	12.5	12.7	16.6	16.9	20.0	22.7

The results in Table I show good checks for the aromatic hydrocarbons. The unsaturated hydrocarbons are relatively high in the first two mixtures, but quite good for the third mixture.

Application of Method

Cracked gasolines produced from different charging stocks were analyzed for their contents of unsaturated, aromatic, naphthene and paraffin hydrocarbons, and the aromatic hydrocarbon values calculated by means of Ricardo's data for toluene.[2] From these data it was calculated that, so far as the antiknock properties in an automotive engine are concerned, 5 per cent of unsaturated hydrocarbons is equivalent to 1 per cent of toluene when both are dissolved in paraffin hydrocarbons. Similarly, 4 per cent of naphthenes is equivalent to 1 per cent of toluene. Of course, the accuracy of this relationship is limited, as Ricardo did not work with pure hydrocarbons. It is assumed that the toluene values so obtained may be converted directly into aromatic values. To obtain the total aromatic hydrocarbon value or its equivalent, the value calculated from Ricardo's data for the unsaturated and naphthene hydrocarbons is added to that obtained by direct analysis.

As a means of further comparison, the highest useful compression ratio, based on Ricardo's toluene value, and the analytical data on the cracked gasolines, are shown in Table II. In obtaining this compression ratio the aromatic hydrocarbons found by direct analysis are considered as equivalent to toluene.

Table II—Analysis of Various Cracked Gasolines
(Figures in Per Cent)

	Tonkawa, Braman. No. Kans. Topped Crude	Ky. Fuel Oil	Smackover Heavy Crude	No. Tex. Fuel Oil	Lost Soldier Wyo. Crude
Hydrocarbons unsaturated	16.1	14.4	14.7	16.0	11.7
Aromatic	17.8	22.5	27.5	18.6	15.0
Naphthene	12.8	10.0	21.2	11.7	16.4
Paraffin	53.3	53.1	36.6	53.7	57.9
Aromatic equiv.	24.2	27.9	36.7	24.7	21.2
Highest useful compression ratio	5.6	5.7	5.9	5.6	5.5

The percentages of the hydrocarbons of each series in straight-run gasoline derived from the various crude oils and corresponding values for the cracked motor fuels derived from the fuel oil residues by heat and pressure are given in Table III. The higher useful compression ratio shown by the cracked motor fuels is due to the higher percentage of unsaturated, naphthene and aromatic hydrocarbons present. These three series function as antiknock constituents in motor fuels, whereas the paraffins knock in high-compression motors.

Table III—Comparison of Hydrocarbons in Straight-Run Gasoline and Cracked Motor Fuels
(Figures in Per Cent)

Hydrocarbons—	Cushing, Okla. Straight-run	Cushing, Okla. Cracked	Somerset, Ky. Straight-run	Somerset, Ky. Cracked
Unsaturated	1.6	10.9	3.8	12.5
Aromatic	4.9	19.8	5.3	14.9
Naphthene	23.7	18.0	20.6	11.8
Paraffin	69.8	51.3	70.3	60.8
Aromatic equiv.	11.1	26.5	11.1	20.4
Ricardo compression ratio	5.1	5.6	5.2	5.5

Motor Tests

To confirm the results obtained by chemical analysis, motor tests were made to determine the antiknock properties of several of the gasolines previously tested. The tests were made by the "listening" method, using a Hupmobile 4-cylinder motor having a constant compression ratio. The knock of the motor was deter-

*Paper presented before meeting of Petroleum Division, American Chemical Society, Tulsa, Okla., April 8, and reprinted from "Industrial and Engineering Chemistry."

[1] J. Soc. Chem. Ind., 40 20T (1921).

[2] Institute of Petroleum Tech. Report of Empire Motor Fuels Committee, pp. 84, 85, 145.

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mined as a function of the spark advance using a standardized knock and checked by two observers. Table IV summarizes the results obtained in these tests.

Table IV—Motor Tests on Cracked Gasolines

	Relative Spark Advance
Mixture of Tonkawa, Braman, No. Kansas Crude	19.5
Smackover crude	32
Kentucky fuel oil	21.7
Cushing, Okla., fuel oil	19.7

In order to evaluate these data in terms of a known mixture, similar tests were made upon mixtures of commercial benzol and a market gasoline containing cracked gasoline, the distillation analyses of which are shown in Table V.

Table V—Distillation Analyses of Known Mixtures

	Com. Gaso.	Com. Gaso.
Baume Gravity	58.1	29.8
Initial boiling point	43.3°C.	80.6°C.
Per Cent Over	Temp. °C.	Temp. °C.
10	78.9	82.2
20	99.4	82.8
30	113.9	83.3
40	127.2	83.9
50	140.6	84.4
60	152.2	85.6
70	165.6	87.2
80	178.9	90.0
90	195.0	98.9
95	207.2	111.1
End Point	222.8	142.8
Loss, per cent	1	0.5

From this table it is seen that the benzol contains a considerable amount of toluene. Analysis by the procedure described in this paper shows that this gasoline contains the following percentages of the various series of hydrocarbons. (Table VI.)

Table VI—Hydrocarbons in Commercial Gasolines
(Figures in Per Cent)

Unsaturated	4.5
Aromatic	12.1
Naphthene	17.6
Paraffin	65.8
Aromatic equivalent	17.4

Motor tests upon this gasoline and mixtures of this gasoline with benzol give the results shown in Table VII.

Table VII—Motor Tests Upon Commercial Gasoline and Mixtures With Benzol

	Relative Spark Advance
Commercial gasoline	18.7
plus 10 benzol	20.0
plus 15 benzol	23.5
plus 20 benzol	24.2
plus 30 benzol	36.5

The conversion of the percentages of unsaturated, aromatic and naphthene hydrocarbons into an aromatic hydrocarbon number of value gives good checks, as is shown by actual automotive engine performance when working upon synthetic blends of commercial benzol and gasoline.

Table VII—Cracked Gasolines Equivalent to Varying Percentages of Benzol Added to a Commercial Gasoline

	Benzol	Gasoline	Aromatic Calculated Hydrocarbons in Blends of Benzol and Gasoline
Tonkawa, Braman, N. Kans. crude	10	90	25.7
Smackover crude	28	72	46.5
Kentucky fuel oil	12.5	87.5	27.7
Cushing, Okla., fuel oil	10	90	25.7

By comparing Tables IV and VII it is seen that the various cracked gasolines under test are equivalent to mixtures of the commercial gasoline and benzol. Analysis of the commercial gasolines shows an aromatic hydrocarbon equivalent of 17.4 per cent.

Comparative values of the motor fuel from actual motor tests and chemical analysis are given in Table IX.

Table IX—Aromatic Hydrocarbon Equivalents of Cracked Gasolines—Comparative Values

	Tonkawa, Braman, Kansas Crude	Smackover Crude	Kentucky Fuel Oil	Cushing, Okla. Fuel Oil
Motor Test	25.7	46.5	27.7	25.7
Chemical Analysis	24.2	36.6	29.0	26.5

TO AUTHORIZE LEASING IN CARBON COUNTY, WYO.

WASHINGTON, Apr. 17.—A bill authorizing the leasing for the production of oil and gas of certain lands in Carbon County, Wyoming, has been introduced in the House by Representative Winter.

It provides that upon relinquishment to the United States within six months after the approval of this act, of all titles, and so forth, claimed and possessed prior to February 25, 1920, and continuously since by Mark D. Woolery, Dudley Sherman Wageley, Dorsey M. Kerr, Andrew J. Denny, Mabel G. Duncan, Michael L. Lundy, and C. Leonard Smith, or their predecessors in interest of Section 34, Township 20n, of Range 78w, sixth principal meridian, and upon payment as royalty to the United States of an amount equal to the value at the time of production of one-eighth of all the oil or gas already produced, these claimants shall be entitled to a lease on the section for a period of 20 years at a royalty of not less than 12½ per cent of all the oil and gas produced. The Secretary of the Interior is to fix the exact amount of the royalty.

MEXICAN PETROLEUM TAXES

Department of Finance of the Mexican Government reports petroleum taxes paid since the industry was started to the beginning of the present year totaled 308,700,754 pesos, equivalent to approximately $154,350,377 United States money. In 1925 $11,778,488 export tax and $30,366,063 production tax on petroleum were paid. Tax on gasoline sales from April 1, 1925, to January 1, 1926, amounted to $3,179,142. The total production of gasoline by the four refineries operating in Mexico for 1925 was 17,419,954 litres, about 5,600,000 gallons.

OIL POLLUTION CONFERENCE

WASHINGTON, D. C., Apr. 17.—The United States has called a conference of maritime nations to meet here June 8 to deal with problems of oil pollution through international agreement. Invitations have been sent to Belgium, Denmark, France, Germany, Great Britain, Greece, Italy, Japan, the Netherlands, Norway, Spain and Sweden. The International Committee points out that pollution of oil exists along the Atlantic, Gulf and Pacific Coasts, and the coasts of the principal maritime nations. It is desired that ships be prohibited from pumping out oil or oily mixtures at sea and be required to utilize facilities in harbors for the collection and disposal for such accumulations.

FRANCHISE TO ROXANA FOR LINE TO REFINERY

CHICAGO, Apr. 17.—The city council of East Chicago has ratified a franchise to the Roxana Petroleum Corp. to lay a pipe line from its refinery site to the loading docks.

It is believed this removes the last obstacle to the immediate construction of the corporation's 15,000-bbl. refinery at East Chicago. Construction of the refinery and also the pipe line from Wood River, Ill., to East Chicago will start at once.

U. S. MUST PAY "GAS" TAX

WASHINGTON, D. C., Apr. 17.—An advance decision by the Comptroller General in relation to State tax on sales of gasoline, holds that while it is not within the power of the State to tax the Federal Government, either as a dealer or purchaser of gasoline, the tax on motor fuels sold within the State imposed by the State of Louisiana and city of New Orleans, on "dealers," and defined in the State law, may be included in the selling price on the purchases of gasoline made by the Government if that price is fixed under an agreement otherwise lawful.

RECEIPTS OF CALIFORNIA OILS AND IMPORTS OF PETROLEUM

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the month of March totaled 2,848,000 bbls., a daily average of 91,871 bbls., compared with 2,668,000 bbls., at daily average of 95,286 bbls. for the month of February.

Receipts at Atlantic and Gulf Cost ports for the week ended April 3 totaled 627,000 bbls., a daily average og 89,571 bbls., against 743,000 bbls., a daily average of 106,143 bbls. for the week ended March 27.

CALIFORNIA OIL RECEIPTS AT ATLANTIC AND GULF COAST PORTS
(Barrels of 42 Gallons)

At Gulf Coast Ports—	Ttl. Month of March	Ttl. Month of Feb.	Wk. Ended April 3	Wk. Ended March 27
At Atlantic Coast Ports—				
Baltimore	217,000	*303,000	.....	50,000
Boston	78,000	*329,000	.....	.....
New York	1,514,000	790,000	466,000	328,000
Philadelphia	515,000	683,000	161,000	215,000
Others	524,000	563,000	.....	150,000
Total	2,848,000	2,668,000	627,000	743,000
Daily Average	9,871	95,286	89,571	106,143
Total Atlantic and Gulf Coast Ports	2,848,000	2,668,000	627,000	743,000
Daily Average	91,871	95,286	89,571	106,142

*Revised.

According to figures collected by the American Petroleum Institute, imports of crude and refined oils, at the principal ports for the month of March totaled 7,826,000 bbls., a daily average of 252,452 bbls., compared with 5,785,000 bbls., a daily average of 206,607 bbls. for the month of February.

Imports at the principal United States ports for the week ended April 3 totaled 1,181,000 bbls., a daily average of 168,714 bbls., compared with 2,367,000 bbls., a daily average of 338,143 bbls. for the week ended March 27.

IMPORTS OF PETROLEUM AT UNITED STATES PORTS
(Barrels of 42 Gallons)

	Ttl. Month of March	Ttl. Month of Feb.	Week Ended April 3	Week Ended March 27
At Atlantic Coast Ports—				
Baltimore	880,000	410,000	163,000	228,000
Boston	494,000	450,000	63,000	*301,000
New York	2,534,000	1,683,000	431,000	722,000
Philadelphia	505,000	265,000	.....	126,000
Others	1,062,000	581,000	136,000	351,000
Total	5,475,000	3,389,000	792,000	1,727,000
Daily Average	176,613	121,036	113,143	246,714
At Gulf Coast Ports—				
Galveston District	600,000	625,000	118,000	183,000
New Orleans and Baton Rouge	1,367,000	1,407,000	206,000	392,000
Port Arthur and Sabine District	220,000	176,000	65,000	25,000
Tampa	164,000	188,000	.....	40,000
Total	2,351,000	2,396,000	389,000	640,000
Daily Average	75,839	85,571	55,571	91,429
At All United States Ports—				
Total	7,826,000	5,785,000	1,181,000	2,367,000
Daily Average	252,452	206,607	168,714	338,143

*Revised.

BOARD REFUSES TO MAKE PUBLIC REPLIES TO OIL QUESTIONNAIRES

WASHINGTON, D. C., Apr. 17.—Secretary Work as chairman of the President's Oil Board, addressed a letter to Hon. Charles Evans Hughes, counsel for the American Petroleum Institute, advising Mr. Hughes that the board has concluded that it will be inadvisable to make available the material which has been received by the board from the oil industry in response to the government questionnaires, before submitting its completed report to the President. The American Petroleum Institute, through Mr. Hughes, recently requested of the chairman this specific datum.

Secretary Work further advised Mr. Hughes that the board is proceeding with the compilation of its report dealing with national petroleum conditions, and that the board would be pleased to know when the counsel for the institute might be expected to submit his views to the board, if he still desires to be heard. At the recent public hearings held by the Federal Oil Conservation Board, Chairman Work assured President Farish, of the Institute, that the government board would delay its report to the President pending the submission of Mr. Hughes' views.

Secretary Work's letter to Mr. Hughes is as follows:

"The members of this board, at a meeting today, had under consideration, among other things, the suggestion advanced by yourself, as counsel for the American Petroleum Institute, and representatives of other organizations representing various branches of the industry, that the board make available the replies received by this board in response to the several questionnaires addressed to the industry. The decision of the board was to not make public this date. I may add that a number of the replies and other material placed at the disposal of the board by leaders of the industry were submitted with the request that such information be regarded as confidential.

"The board is proceeding with the formulation of its report concerning domestic petroleum conditions. The institute was assured, however, that this report would not definitely and finally be concluded until you were given an opportunity to be heard. If you will be good enough to advise this board when it will suit your convenience to appear before it, an effort will be made to meet your wishes. If you prefer or intend, in lieu of personally appearing before the board, to submit a brief covering the subject, it would enable greater facilitation of the board's work, if you would advise approximately when such brief may be expected.

"I shall leave Washington about the middle of April, to be absent for two weeks, and it is because of this contemplated absence that I would suggest, if you desire to appear before the board, that you arrange, if entirely convenient, to come to Washington before April 15 or after May 15.

"Upon completion of the board's report, same will be transmitted to the President, and not made public until authorization is given by the President."

PROTESTS RATES ON STAVES

WASHINGTON, D. C., Apr. 17.—The Midwest Refining Co. has filed a complaint with the Interstate Commerce Commission attacking rates on wooden barrel staves, wooden headings and iron hoops, from Casper, Wyo., to Whiting, Ind., saying the lumber rate of 72½ cents should have been applied, instead of 91 cents charged. The wooden barrels were shipped by the Standard Oil Co. of Indiana for the use of the Midwest company.

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HOUSE COMMITTEE REPORTS BILL TO LEASE EXECUTIVE ORDER LAND

By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Apr. 17.—The Committee on Indian Affairs of the House has reported, with amendments, the Hayden Bill (H. R. 9133) to authorize oil and gas mining leases upon allotted Indian lands within executive order Indian reservations. Probably it will be as much as six weeks before this bill is taken up in the House so that all interested persons now have an opportunity to study the form in which it has been submitted and to offer suggestions for its amendment. A similar bill has been introduced in the Senate by Senator Bratton and it is now in the hands of a subcommittee of which the senator is chairman.

If this bill becomes a law, unallotted executive order Indian reservations will be subject to leasing for oil and gas mining purposes as other tribal reservations are now leased. Prior to May 27, 1924, a number of permits to prospect for oil and gas on executive order Indian reservations were issued by this department to applicants under the general leasing act of February 25, 1920. (41 Stat. 437). The attorney general by opinion of May 27, 1924, held that the act of February 25, 1920, does not apply to such reservations. Following that holding this department has not granted any leases covering such lands. Permits have been issued to 16 persons covering lands within the Navajo Reservation in Utah and four in Arizona. It is understood that some of the permittees have expended considerable sums of moneys in attempting to develop the lands. The bill under consideration, if enacted, will allow such permittees to continue prospecting for oil and gas on the land covered by their permits, and provides that they shall be entitled to lease in the event valuable oil or gas deposits are found, covering one-fourth of the acreage embraced by their prospecting permits, provided that a permittee may be given a lease or as much as 160 acres if his permit covers that much.

In addition to the applications upon which permits were granted, there were filed approximately 400 for which no permits were issued. Undoubtedly many of these applications were purely speculative and nothing was expended by the applicants in attempted development, and it is not believed they should be recognized or given any preference right for leases covering the lands for which they applied.

Text of the Bill

With the numerous amendments made to the bill as reported to the House, it provides as follows:

"That unallotted lands within the limits of any reservation or withdrawal created by executive order for Indian purposes or for the use or occupancy of any Indians or tribe may be leased for oil and gas mining purposes in accordance with the provisions contained in the Act of May 29, 1924 (Firty-third Statutes, Page 244.)

"Section 2. That the proceeds from rentals, royalties or bonuses of oil and gas leases upon lands with executive order Indian reservations or withdrawals shall be deposited in the treasury of the United States to the credit of the tribe of Indians for whose benefit the reservation or withdrawal was created or who are using and occupying the land, and shall draw interest at the rate of 4 per cent per annum and be available for appropriation by Congress for expenses in connection with the supervision of the development and operation of the oil and gas industry and for the use and benefit of such Indians: Provided, that said Indians, or their tribal council, shall be consulted in regard to the expenditure of such money, but no per capita payment shall be made except by Act of Congress.

"Section 3. That taxes may be levied and collected by the State or local authority upon improvements, output of mines or oil and gas wells or other rights, property and assets of any lessee upon lands within executive order Indian reservations in the same manner as such taxes are otherwise levied and collected, and such taxes may be levied against the share obtained for the Indians as bonuses, rentals and royalties, and the Secretary of the Interior is hereby authorized and directed to cause such taxes to be paid out of the tribal funds in the treasury: Provided, that such taxes shall not become a lien or charge of any kind against the land or other property of such Indians.

Permit to Prospect

"Section 4. That the Secretary of the Interior is hereby authorized, under such rules and regulations as he may prescribe, to allow any applicant to whom a permit to prospect for oil and gas under lands within an Indian reservation or withdrawal created by executive order has heretofore been issued in accordance with the provisions of the Act of Febraery 25, 1920 (Forty-first Statutes, Page 437), or the holder thereof, to prospect for a period of two years from the date of this act takes effect, or for such further time as the Secretary of the Interior may deem reasonable or necessary for the full exploration of the land described in his permit, under the terms and conditions therein set out, and a substantial contribution toward the drilling of the geologic structure by the holder of a permit thereon may be considered as prospecting under the provisions hereof; and upon establishing to the satisfaction of the Secretary of the Interior that valuable deposits of oil and gas have been discovered within the limits of the land embraced in any permit, the permittee shall be entitled to a lease for one-fourth of the land embraced in the prospecting permit: Provided, that the permittee shall be granted a lease for as much as 160 acres of said lands if there be that number of acres within the permit. The area to be selected by the permittee shall be in compact form and, if surveyed, to be described by the legal subdivisions of the public land surveys; if unsurveyed, to be surveyed by the Government at the expense of the applicant for lease in accordance with rules and regulations to be prescribed by the Secretary of the Interior, and the lands leased shall be conformed to and taken in accordance with the legal subdivisions of such surveys; deposits made to cover expense of surveys shall be deemed appropriated for that purpose, and any excess deposits may be repaid to the person or persons making such deposit or their legal representatives. Such leases shall be for a term of 20 years upon a royalty of 5 per centum in amount or value of the production and the annual payment in advance of a rental of $1 per acre, the rental paid for any one year to be credited against the royalties as they may accrue for that year, with the preferential right in the lessee to renew the same for successive periods of 10 years upon such reasonable terms and conditions as may be prescribed by the Secretary of the Interior. The permittee shall also be entitled to a preference right to a lease for the remainder of the land in his prospecting permit at a royalty of not less than 12½ per centum in amount or value of the production, the royalty to be determined by competitive bidding or fixed by such other method as the secretary may by regulations prescribe: Provided further, that the secretary shall have the right to reject any or all bids: And provided further, that the Secretary of the Interior in his descretion is authorized to reinstate, in the order of their original filing, all applications of qualified applicants filed prior to May 27, 1924, for permits to prospect for oil and gas under the said Act of February 25, 1920, upon any lands covered by the provisions of this Act, and which applications were not granted, upon the following conditions: Written request for such action shall be filed by the original applicant, or his heirs, in the land office of the ap-

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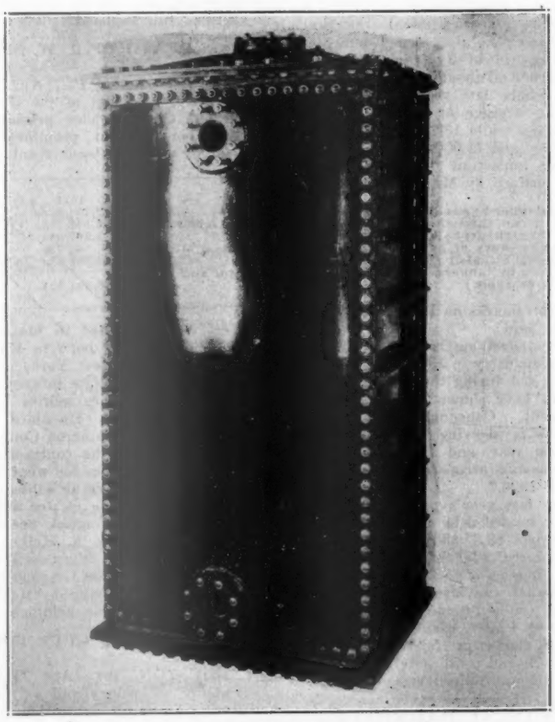

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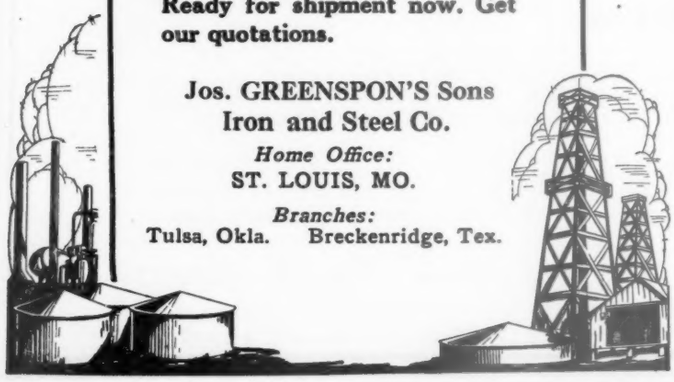
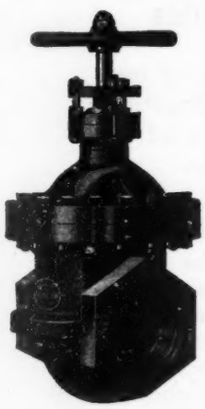


Why Ludlow Leads



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propriate land district within 90 days of the approval of this Act, and the reinstatement of any such applications shall confer the right of prospecting and to secure a lease or leases as in this section provided, upon the lands described in such application."

The writer will be glad to furnish to readers of The Oil and Gas Journal any information that may be desired in respect to the provisions of the foregoing bill, so far as it is possible to do so, from the senators who sponsored it in Congress or from the Secretary of the Interior Hubert Work, in whose department the original bill originated, and any letter embodying such inquiry, will receive prompt attention.

SINCLAIR OPERATIONS REVIEWED BY CHAIRMAN

Operating activities of Sinclair Consolidated Oil Corp. in 1925, as outlined in the annual report by the chairman, H. F. Sinclair, show considerable expansion in the various departments.

The domestic crude producing department had net production of 9,058,709 bbls., about a 50 per cent increase over the 6,175,325 net bbls. produced in 1924. The daily average last year was just under 25,000 bbls., while in 1924 the daily average was 17,000 bbls. In Mexico, where the country's total production declined from the previous year, Sinclair produced 4,475,345 bbls., against 9,841,832 in 1924.

The company's combined net crude production last year was 13,534,054 bbls., or a daily average of 34,300 bbls.; in 1924 the combined Mexican and domestic production of 16,017,157 bbls. was a daily average of 43,000 bbls. Though combined production declined, the drop was in Mexican crude, which is lower in quality, while domestic production showed a gain, due largely to Garber production, this being high-grade oil.

The report also shows that the Sinclair Crude Oil Purchasing Co., owned jointly with the Standard Oil Co. of Indiana, had 38,079,761 bbls. in storage at the end of 1925, against 42,395,625 at the close of 1924. The decline in stored oil of 4,315,865 bbls. shows that this big purchasing company took an average of about 12,000 bbls. daily from storage in 1925. As a result of this withdrawal, the Sinclair Pipe Line Co., also owned jointly with the Standard of Indiana, increased its run of crude oil about 3,000,000 bbls. to 28,971,931 bbls. last year. The 1925 runs were an average of better than 79,000 bbls. daily, while 1924 runs of 25,956,421 bbls. averaged 71,000 bbls. a day.

Other important operating results in 1925, outlined by Mr. Sinclair, follow:

	1925	1924
Net casinghead gasoline (gals)	22,134,578	19,045,633
Crude oil run through gasoline and lub. refineries (bbls.)	20,045,306	14,940,090
Crude through asphalt refineries (bbls.)	5,807,013	3,579,235
Average recovery of gasoline from crude use for gas. mfr.	60.7%	66.1%
Gasoline sold (gals.)	601,938,164	462,767,096
Oil cargoes by tankers, excluding Cuban intercoastal and barge deliveries (bbls.)	17,561,024	15,638,131

In his remarks on the oil business, Mr. Sinclair said:

"The underlying conditions of the petroleum industry in 1925 were better than in 1924 and during the first three months of 1926 have shown a still further improvement. Consumption of petroleum products is showing a marked increase over last year, and all indications point to increasing prosperity during the balance of 1926."

From last year's profits, the company reduced funded debt and purchase money obligations $3,370,360; preferred stock was reduced $688,900, and net current assets increased $2,328,347. More than $12,000,000 was invested in development of new crude production, acquiring undeveloped leases, casinghead plants, extending marketing facilities, principally in eastern and southeastern states, and a small amount in refineries.

PRESIDENT PARRIOTT ON TRANSCONTINENTAL

In his annual report on the operations of the Trancontinental Oil Co., President F. B. Parriott says:

"Gross crude oil production of the company showed a substantial gain, averaging 5,391 bbls. daily in 1925, compared with 4,267 in 1924, 3,672 in 1923, 4,922 in 1922 and 515 bbls. in 1921. Crude production should be increased by completion of drilling operations now in progress, a number of which are on producing properties.

"In the Carmen district, Colombia, the Standard Oil Co. of California is continuing its drilling operations on properties of Latin-America Petroleum Co., in which Transcontinental Oil has an interest.

"A marked improvement in the earnings of the refining and sales departments contributed substantially to the year's results, and further improvements should follow a continuance of the company's policy in extending its marketing facilities in the Mid-Continent and southwestern territory, where its refineries are located. It is planned to provide direct consumer outlets for all refined products as rapidly as is consistent with profitable distribution."

OIL GOES WITH LAND, ROYALTIES DECISION

FREMONT, Ohio, Apr. 17.—The Court of Appeals has affirmed the decision of the Common Pleas Court in a far-reaching decision of oil royalty. The old point of common law that a man owning a piece of land owns the land to the center of the earth was used by the judges of the Court of Appeals in deciding against Phillip Daub and Mrs. Cora M. Bowlus in their claim for money for oil deposits on their land.

The brother and sister were left 240 acres of land in Sandusky County, in the Trenton Rock oil field, by their father in his will. He failed to mention that there were 20 oil wells on the property. To liquidate debts, the property was sold for its land value, the brother and sister claiming that they did not know of the oil being on the property. They contended that they were entitled to royalty from the oil being produced on the land. The Common Pleas Court held that the brother and sister sold the land for what was on it and, because there was no provision for royalties from oil, could not collect. The higher court affirmed this decision.

DEATH OF J. W. SHAY

PITTSBURGH, Pa., Apr. 17.—John W. Shay, president of the Shay-McMullen Oil Co. and vice president of the Greensboro Gas Co., prominent in the oil fields of western Pennsylvania, Ohio and West Virginia, died in his home here, aged 66. He was born in Fillmore, Allegany County, New York, and entered the oil business in its infancy, being engaged in various capacities from roustabout to producer. He aided in the development of Washington County in 1888 as a member of the contracting firm of Shay & Fall. Then he went to Sistersville, W. Va., where he subsequently sold his holdings to the Carter Oil Co., and returned to Washington, becoming associated with Henry A. Kelly, contractor and producer. Mr. Shay, with Joseph W. Craig, organized the Greensboro Gas Co. He also founded Shay-McMullen Co., which has extensive holdings in Ohio.

STUDYING GULF POOLS

HOUSTON, Tex., Apr. 17.—Fourteen students of geology and petroleum engineering at the Colorado School of Mines, Golden, Colo., have reached Houston to spend two weeks in studying conditions in the Gulf Coast pools. The students visit a different section of the country each year. They are in charge of R. C. Beckstrom, dean of the department of petroleum engineering.

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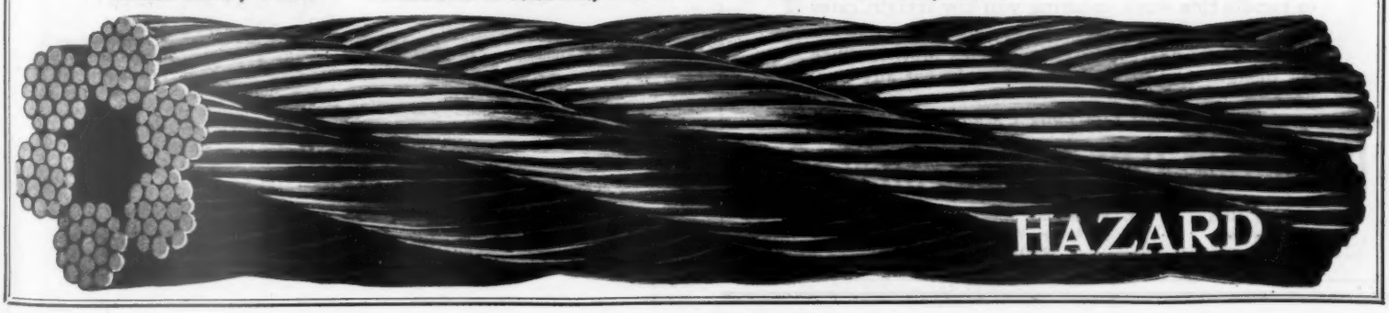

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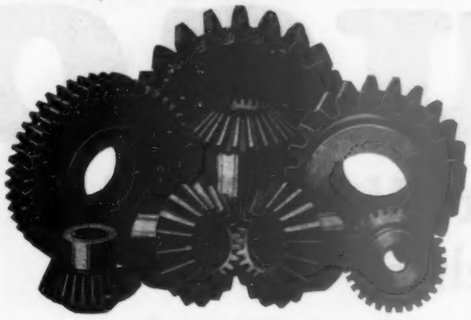

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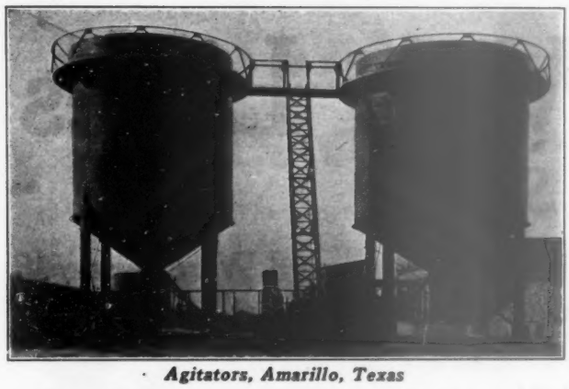

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SHIPMENTS FROM GULF COAST DECREASE DURING FEBRUARY

By P. L. McGreal

HOUSTON, Tex., Apr. 17.—A decided slump is noted in both refinery products and crude water shipments from Gulf ports during the month of February compared with January. Refinery products decreased 1,047,557 bbls. and crude declined 1,936,601 bbls.

Export consignments of refinery products decreased 84,260 bbls. during the month, but crude consignments increased 163,463 bbls. over January.

The Standard Oil Co. of Louisiana was the largest shipper, loading out a total of 3,421,000 bbls. from its Baton Rouge refinery terminals and New Orleans storage. The Gulf Refining Co. ranked second with a total of 2,859,663 bbls. loaded at its Port Arthur terminals and the Humble Oil & Refining Co. is third with 2,889,122 bbls. of refined and crude loaded at Baytown refinery, Texas City and Neches terminals. The Texas Company loaded a total of 1,546,717 bbls. at its Port Arthur terminals.

The Port Arthur-Beaumont district handled 6,219,092 bbls. of gross shipments. The Texas City-Houston ship channel terminals loaded over 4,150,000 bbls. of the total shipped.

The following table gives the refinery and crude shipments by each company:

By The Texas Company from Port Arthur

Refined	
Coastwise	882,988
Export	419,959
Total	1,302,947
Crude	
Coastwise	227,604
Export	16,166
Total	243,770

By Gulf Refining Co. from Port Arthur

Refined	
Coastwise	2,564,000
Export	118,021
Total	2,722,021
Crude	
Coastwise	137,642

By Magnolia Petroleum Co. from Beaumont

Refined	
Coastwise	*900,238

*65,805 bbls. manufactured fuel oil.

By Humble Oil & Refining Co. from Neches Terminals (Orange)

Crude	
Coastwise	233,805

By Atlantic Oil Producing Co. from Atreco

Refined	
Coastwise	74,369
Crude	
Coastwise	273,489

By Atlantic Oil Producing Co. from Port Arthur

Crude	
Coastwise	225,923

By Atlantic Oil Producing Co. from Smith's Bluff

Crude	
Coastwise	104,888

By Humble Oil & Refining Co. from Texas City

Crude	
Coastwise	630,260

By Vacuum Oil Co. from Texas City

Crude	
Coastwise	250,920

By Mariand Oil Co. from Texas City

Refined	
Export	62,727
Crude	
Coastwise	356,422
Total	419,149

By Humble Oil & Refining Co. from Baytown (Refinery)

Refined	
Coastwise	948,972
Export	429,841
Total	1,378,813
Crude	
Coastwise	445,520
Export	200,724
Total	646,244

By Crown Central Petroleum Corp. from Houston (Pasadena)

Crude	
Coastwise	**265,138

**217,915 bbls. to Beacon Oil Co., Boston. 47,223 bbls. account Big Lake Oil Co.

By Sinclair Refining Co. from Houston (Sinco)

Refined	
Coastwise	311,028
Export	52,556
Total	363,584
Crude	
Coastwise	152,863

By Galena-Signal Oil of Texas From Houston (Galena)

Refined	
Coastwise	138,000
Export	35,000
Total	173,000

By Standard Oil Co. of Louisiana From Baton Rouge (Refinery)

Coastwise	1,410,326
Export	1,025,475
Total	2,435,801
Crude	
Coastwise	931,667

By Standard Oil Co. of Louisiana From New Orleans (Storage)

Refined	
Export	53,532

Summary Shipments of Refined and Crude from Gulf Ports During Month of February, 1926

Company and Port—	Refined	Crude	Total
The Texas Co., Port Arthur	1,302,947	243,770	1,546,717
Gulf Refg., Port Arthur	2,722,021	137,642	2,859,663
Magnolia Pet., Beaumont	900,238	.....	900,238
Humble O. & R., Neches	.....	233,805	233,805
Atlantic O. P., Atreco	74,369	273,489	347,858
Atlantic O. P., Port Arthur	.....	225,923	225,923
Atlantic O. P., Smith's Bluff	.....	104,888	104,888
Humble O. & R., Texas City	.....	630,260	630,260
Vacuum Oil, Texas City	.....	250,920	250,920
Mariand Oil, Texas City	62,727	356,422	419,149
Humble O. & R., Baytown	1,378,813	646,244	2,025,057
Crown Central, Houston	.....	265,138	265,138
Sinclair Refg., Houston	263,584	152,863	416,447
Galena-Signal, Houston	173,000	.....	173,000
Stand. of La., Baton Rouge	2,435,801	931,667	3,367,468
Stand of La., New Orleans	53,532	.....	53,532
Totals for February	9,367,032	4,453,031	13,820,063
Totals for January	10,414,589	6,389,632	16,804,221
Difference	1,047,557	1,936,601	2,984,158
Exports		Exports	
The Texas, Port Arthur	419,959	16,166	436,125
Gulf Refg., Port Arthur	118,021	.....	118,021
Mariand Oil, Texas City	62,727	.....	62,727
Humble O. & R., Baytown	429,841	200,724	630,565
Sinclair Refg., Houston	52,556	.....	52,556
Standard of La., Baton Rouge	1,025,475	.....	1,025,475
Standard of La., New Orleans	53,532	.....	53,532
Total for February	2,162,111	216,890	2,379,001
Total for January	2,077,851	53,427	2,131,278
Difference	84,260	163,463	247,723

TEXAS SHOWS INCREASE IN DRILLING PERMITS

SAN ANTONIO, Tex., Apr. 17.—There were 1,059 applications for permits to drill in Texas filed with the oil and gas division of the Texas Railroad Commission during March which was over 200 greater than in February and about 400 greater than in January. Official figures have just been issued by the commission. They show 495 producers completed during the month of March of which 20 were gassers, the producers being 163 greater than in January and 200 greater than in February.

The complete figures by counties showing the total number and kind of applications filed are as follows:

	MARCH, 1926						
County—	To Drill	To Shoot	To Plug	Prod	Dry	Plug. Gas	Total
Archer	195	41	84	131	84	75 ..	610
Atascosa	5	..	..	3	..	.. ..	8
Brazoria	1	..	1	3	..	.. ..	5
Brown	84	12	7	23	16	12 2	156
Bastrop	3	..	..	2	1	1 ..	7
Bexar	9	..	..	6	1	2 1	19
Baylor	2	..	3	..	7	7 ..	19
Bell	3	..	..	..	..	1 ..	5
Brewster	1	..	..	..	1	.. ..	2
Brooks	1	..	..	..	..	.. ..	1

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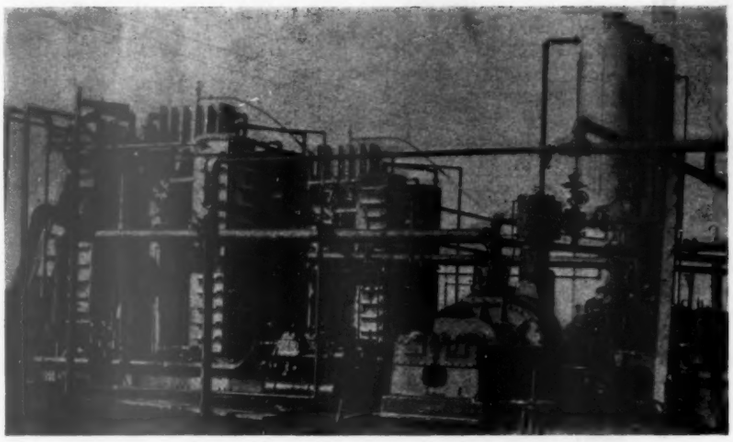

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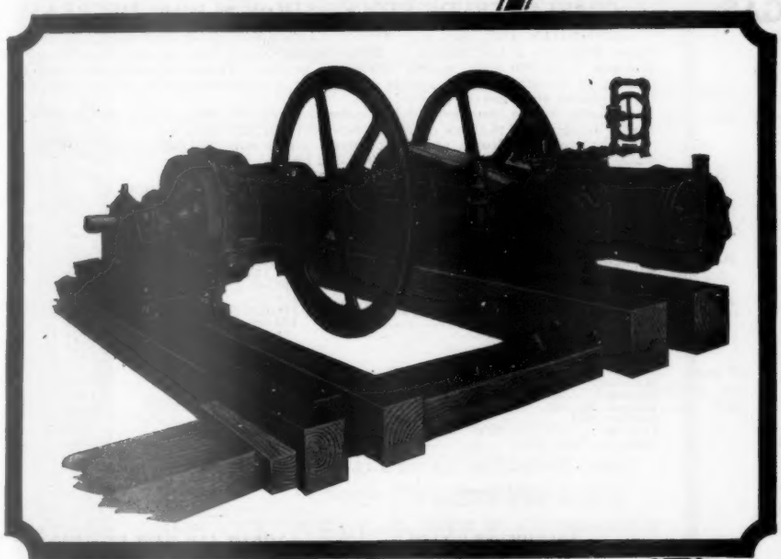

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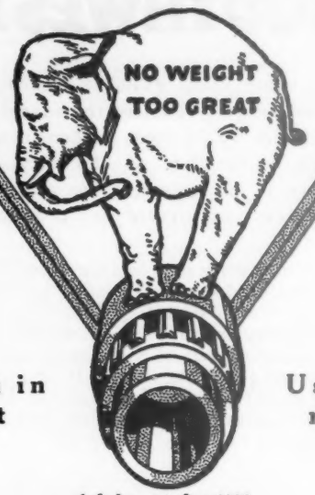

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Callahan	89	28	30	39	33	39	..	258
Coleman	31	..	13	10	14	12	1	81
Caldwell	17	..	3	16	5	1	..	42
Crane	4	..	..	..	..	..	..	4
Crockett	17	1	1	..	1	..	..	20
Carson	4	1	1	..	..	..	..	6
Clay	5	1	4	4	5	4	..	23
Concho	1	..	..	..	..	..	..	1
Collin	..	..	1	..	1	..	..	2
Cherokee	1	..	..	..	..	..	..	1
Comanche	1	1	..	5	..	6	..	11
Chambers	3	..	3	..	2	2	..	10
Cooke	..	..	2	..	3	1	..	6
Culbertson	1	..	1	..	1	1	..	4
Duval	6	..	1	3	4	3	1	18
Dewitt	..	..	..	..	1	1	..	2
Eastland	19	7	17	5	8	8	..	64
Erath	1	..	1	..	..	1	..	3
El Paso	1	..	..	..	..	..	..	1
Freestone	..	..	6	..	2	3	..	11
Fort Bend	6	..	2	2	3	2	1	15
Falls	..	..	1	..	..	1	..	2
Guadalupe	3	..	1	3	3	2	..	12
Galveston	4	..	1	1	5	5	..	16
Glasscock	..	..	2	..	..	1	..	3
Garza	1	..	1	..	1	1	..	4
Gray	1	..	..	..	..	..	..	1
Gonzales	1	..	..	..	..	..	..	1
Grimes	..	..	3	..	..	..	..	3
Hunt	1	..	..	..	1	1	..	3
Hardin	5	..	14	7	..	5	..	31
Harris	11	..	8	14	4	5	..	42
Hutchinson	55	5	2	5	1	..	..	68
Haskell	1	..	..	..	..	..	..	1
Harrison	2	..	..	..	..	3	1	6
Hidalgo	..	..	1	..	1	..	..	2
Jefferson	7	..	2	3	4	2	..	18
Jack	4	..	..	..	..	..	..	4
Jim Hogg	9	..	..	..	2	4	2	17
Kleberg	..	..	..	2	1	1	..	4
Kendall	..	..	..	..	..	1	..	1
King	..	..	1	..	1	..	..	2
Liberty	13	..	5	8	3	2	..	31
Limestone	3	2	3	1	2	6	..	17
Live Oak	4	..	..	..	..	1	1	6
La Salle	1	..	..	..	1	..	..	2
Loving	..	..	1	..	..	..	..	1
Milam	14	..	1	5	3	1	1	25
Medina	12	..	3	1	3	2	..	21
Mitchell	7	8	..	7	..	..	..	22
Marion	3	..	..	2	2	..	..	7
Montague	13	1	3	12	3	2	1	34
Matagorda	3	..	1	..	..	1	..	5
McCulloch	10	..	..	..	4	..	..	14
Maverick	..	..	1	..	..	..	..	1
McMullen	1	..	..	..	..	..	..	1
Moore	..	..	..	..	..	1	1	2
Navarro	8	..	8	..	4	4	1	25
Newton	2	..	..	..	..	..	..	2
Orange	5	..	1	6	3	4	..	19
Palo Pinto	2	1	6	1	3	5	..	18
Panola	..	..	3	..	..	..	..	3
Pecos	2	..	..	..	..	..	..	2
Reeves	..	..	..	..	1	..	..	1
Reagan	14	..	2	12	4	2	..	34
Refugio	2	..	..	..	1	..	2	5
Runnels	..	..	1	..	1	1	..	3
Shackelford	47	5	15	11	15	14	..	107
Stephens	19	14	15	7	4	16	2	77
Swisher	1	..	..	..	..	..	..	1
Sterling	1	..	1	..	1	..	..	3
Shelby	..	..	..	..	1	..	..	1
Sabine	1	..	..	..	..	..	..	1
Taylor	1	..	..	..	..	..	..	1
Throckmorton	4	..	2	1	3	2	..	12
Tom Green	..	..	2	..	1	..	..	3
Travis	2	..	..	..	..	..	..	2
Upton	7	1	1	1	1	..	..	11
Uvalde	..	..	..	..	1	3	..	4
Waller	1	..	..	..	..	..	..	1
Wichita	134	40	53	62	55	49	..	393
Wilbarger	46	2	7	43	9	7	..	114
Webb	11	..	..	4	1	1	2	19
Wheeler	2	..	1	1	..	..	..	4
Wharton	10	..	1	2	1	..	..	14
Williamson	2	1	1	..	1	1	..	6
Young	36	11	26	23	22	28	..	146
Zapata	2	..	1	..	1	1	..	5
Total	1059	183	383	495	371	369	20	2880
January	670	123	302	329	292	313	33	2062
February	836	170	307	286	288	293	26	2206
March	1059	183	383	495	371	369	20	2880
Total 1926—first 3 mo.	2565	476	992	1110	951	975	79	7148

COASTAL CRUDE STOCKS SHOW SLIGHT DECREASE

HOUSTON, Tex., Apr. 17.—Stocks of Gulf Coast crude decreased 605,510 bbls. between February 1 and March 1. Those in the North Central and East Texas Fields declined 1,709,080 bbls. during the same period. These decreases account for the placing of Coastal crudes capable of yielding a gasoline content under high pressure being placed on a gravity basis.

Stocks in the southwest fields increased 362,560 bbls., while the surplus in the North Louisiana-Arkansas division increased 591,920 bbls.

The stocks of North and East Texas crudes one year ago were 41,045,675 bbls., while the total Gulf Coast were 12,975,353 bbls.

The following table shows the storage at various places:

COASTAL CRUDE IN STORAGE MARCH 1, 1926

District—	March 1 Steel	March 1 Earthen	February 1 Steel	February 1 Earthen
Sour Lake	1,635,800	2,283,100	1,722,480	2,283,180
Humble	718,400	2,018,775	1,291,280	2,129,685
West Columbia	1,204,110	1,135,500	902,970	1,138,150
Orange	160,100	1,037,800	193,350	1,032,750
Spindletop	1,421,570	.....	1,509,230	.....
Hull	215,000	60,720	328,890	60,720
Goose Creek	150,330	1,800	123,800	6,600
Pierce Junction	198,710	1,230	2,100	168,500
Saratoga	172,500	.....	186,000	.....
Big Creek	54,000	.....	55,875	.....
Jennings (La.)	84,900	8,140	82,140	.....
South Liberty	18,150	.....	20,150	.....
Vinton (La.)	244,220	.....	377,500	.....
Markham	7,150	.....	10,150	.....
Batson	5,000	.....	4,000	.....
Damon Mound	5,050	.....	6,850	.....
Barber Hill	3,375	.....	3,360	.....
Dayton	250	.....	250	.....
Anse La Bute (La.)	1,050	.....	1,280	.....
Total	6,399,675	6,547,065	6,822,665	6,819,585
Combined totals March 1		12,946,740		
Combined totals February 1		13,642,250		
Decrease		695,510		

SOUTHWEST FIELDS
(All Steel Storage)

	March 1	Feb. 1
Luling	718,440	402,360
Lockhart	6,680	6,250
Mirando	*275,000	218,930
Total March 1	1,000,120	627,540
Increase	.....	372,580

NORTH AND EAST CENTRAL TEXAS

Field—	March. 1	Feb. 1
Eastland and Stephens Counties	8,784,780	8,947,900
Burkburnett	644,980	838,600
Electra	206,240	284,820
Mexia	11,837,550	12,346,800
Powell	6,564,390	7,283,640
Archer County	34,780	43,900

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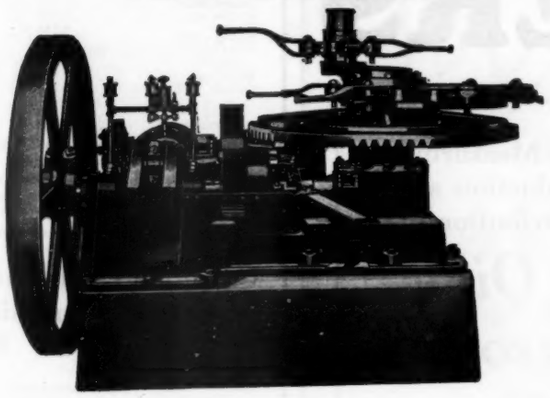

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Trackson Full-Crawler for Fordsons

Petrolia	40,800	36,000
Vernon	32,100	27,560
Currie	6,395	6,375
Nacona	.....	45,500
Total	28,152,615	29,861,095
Decrease	1,709,080	.....

NORTH LOUISIANA AND ARKANSAS	March 1	Feb. 1
Smackover	39,527,590	39,339,000
El Dorado	2,435,140	2,382,410
Homer	4,641,650	4,427,000
Haynesville	4,793,960	5,002,100
Crichton, De Soto, Bull Bayou	5,245,870	5,028,500
Bellevue	181,600	181,260
Cotton Valley	350,680	374,300
Total	47,276,490	46,684,570
Increase	.....	591,920

In addition to the stocks of Gulf Coast crude there are approximately 6,971,540 bbls. of light gravity crudes stored at tank farms and refineries in the Coastal area, which is a decrease of 709,720 bbls. compared with the February 1 figures.

Canadian Geologist Discusses Conditions In Border Fields

By Victor Lauriston

CHATHAM, Ont., Apr. 17.—Speaking to the Canadian Institute of Mining and Metallurgy at Montreal recently, Charles C. Ross supervisory engineer of the Department of the Interior at Galgary, referred to prospects of oil and gas in the border fields of southern Alberta, just north of the Montana boundary. Reviewing the results already secured he said:

"Bow Island and Burdett may be linked together. This field covers about 50 square miles and is about 40 miles west of Medicine Hat on the C. P. R. Crow's Nest line.

"Twenty-seven wells were drilled in this area, three of which were drilled into water. The initial pressure on the wells brought in as gassers ranged from 675 pounds to 1,010 pounds per square inch, and the open flow ranged from 1,300,000 to 29,000,000 feet per day.

"Many of the wells were drilled during 1911 and 1912, and the last in 1919. As many of the wells were drilled by contract, very little information is available on the formations penetrated. The producing sand was penetrated at an average depth of 2,050 feet near the base of the Benton shales of Colorado age, which underlie the Milk River sandstone.

"In 1913 a 16-inch pipe line was built from Bow Island to Calgary, a distance of 161 miles, and this was the main source of gas supply for Calgary until 1923.

"Since 1911 the Bow Island Field has produced large volumes of gas, so much so that now edge water has appeared and the upper gas horizon has gone to water. There is no return from this condition and consequently a large number of those wells have become a total loss.

"The rock pressure has dropped from 750 pounds per square inch in 1917 to 210 pounds per square inch in 1923, and the total volume for 1924 was 17,000,000 feet of gas per day. This has been due, no doubt, to the heavy draw on the wells during the years from 1912 to 1917.

"The wells producing in this area are now few in number. Water has encroached to such an extent that production from the Bow Island gas sand is practically at an end. However, in view of the large volumes of gas secured from lower horizons at points to the south, there would appear to be possibilities of further gas sands being found in the lower horizons in this field.

Foremost Field

"Foremost Field is about 6 miles south and west of the town of Foremost on the C. P. R. line running south and east from Lethbridge through southern Alberta and Saskatchewan. Nine wells were drilled in this area with marked results. The initial closed pressure ranged from 585 to 640 pounds per square inch and the open flow of gas measured as high as 17,000,000 feet per day. Since 1923 the major supply of gas for Calgary has been from this field.

"During 1925 wells Nos. 5 and 6 of the gas company were completed. No. 5

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TULSA, OKLA.

secured 11,000,000 feet of gas per day and No. 6 1,330,000 feet of gas per day.

"In No. 5 at a depth of 2,005 feet a show of oil was encountered. The sand was not tested, and as a result no very definite information is available as to quantity and quality. The show was obtained in the Benton shales, which is in itself significant since these shales were considered incapable of producing oil.

"The gas horizons in the Foremost Field lie at a depth of approximately 2,200 feet at the base of the Colorado formation. The sands appear to be lenticular, and if this be so this field will be longer-lived and will not be subject to flooding in the same degree from deflective wells, such as has been the case in the Bow Island Field. This field has every prospect of expansion, and if carefully handled will last a considerable period.

"On what has occurred in the past in producing gas fields, a few words of caution are possibly in order.

"Gas wells should be produced to show a gradually declining rock pressure and should never be drawn on heavier than 40 per cent of their open flow capacity. To open one or two wells wide open and keep the balance shut is not good practice. Water is drawn into bays underground and wherever bays are formed, islands of gas are left, which have no outlet, and the possible amount of gas recovered is necessarily very much reduced. It is necessary to draw evenly from all parts of any gas field, so that the water line will gradually advance from all sides at an even rate, and thus drive out all the gas.

Boundary Area

"The boundary area of southern Alberta is a strip of country about 12 miles in width adjoining and paralleling the international boundary line, from Range 8, west of the Fourth Meridian, west of the foothills.

"Of the 14 wells drilled to depth in this area, 8 secured shows of oil or gas, or both oil and gas. The oil shows were not commercial, but gas was obtained in commercial quantities.

"The Rogers-Imperial well has secured the largest gasser in Canada. The well has a gas flow of some 50,000,000 feet per day and a pressure of 1,180 pounds per square inch. This well is of considerable importance. It is located on a structure and produces from the same horizons that have been found productive in the Kevin-Sunburst Field of northern Montana.

"The Dead Horse Coulee well of the Imperial Oil Co. is located about 1 mile northwest of the Rogers-Imperial well. The Dead Horse Coulee well secured several small shows of oil and found water at the corresponding geological depth to that in which the Rogers-Imperial well secured gas. Both wells were completed during the past year.

"From the evidence secured from both of these wells it would appear that there is yet a possibility of securing oil production in this area, since it is believed that the Dead Horse Coulee well drilled into the edgewater of this structure."

PIPE LINE VETERAN DIES AT PITTSBURGH

PITTSBURGH, Pa., Apr. 17.—Ellwood G. Wright, retired vice president and general superintendent of the Southwest Pennsylvania Pipe Line Co., died at his residence, 334 South Dallas Avenue, Sunday morning. Mr. Wright was one of the few surviving old-time pipeliners, having been engaged in the eastern oil fields from the early seventies until his retirement in 1920.

Mr. Wright was born in Lancaster County, March 31, 1847, on a farm and when young went to the Middle West for a time and then returned to the oil regions and engaged in pipe line work in Clarion County, and later was transfered to the Bradford Field where he was appointed a district foreman. When the Washington County Field was opened he was transferred to the southwest and made superintendent. He was in charge at the time of the opening of the great McDonald and Wildwood fields.

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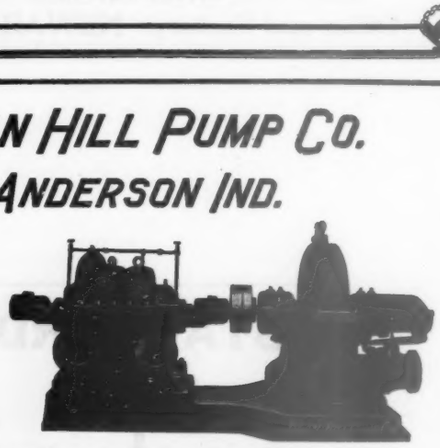

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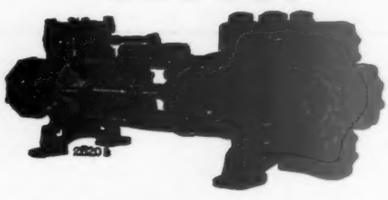

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Oil Board Inquiry And Probable Result As H. F. Bain Sees It

H. Foster Bain, formerly chief of the U. S. Bureau of Mines, now secretary of the A. I. M. E. and editor of Mining and Metallurgy, publishes the following editorial in the current issue on "Conservation of Petroleum":

The report of the Federal Oil Conservation Board, when it appears, now seems likely to be an important document. The most hopeful phase of the hearings was the spirit of co-operation that prevailed throughout. There was a minimum of talking for effect, of evident attempt to defend a position already taken. In great majority those present seemed actuated by a real desire first to define and to measure the problem to be faced and second to co-operate in finding a solution.

Both the Government and the industry are to be congratulated. The President, in his letter of December 19, 1924, had said, "I would express the desire that these conferences may be open and exhaustive. The oil industry itself might be permitted to determine its own future. That further might be left to the simple working of the law of supply and demand but for the patent fact that the oil industry's welfare is so intimately linked with the industrial prosperity and safety of the whole people, that Government and business can well join forces to work out this problem in practical conservation." It now seems probable that this ideal may be realized.

It is an open secret that in many quarters the creation of the Federal Oil Conservation Board was looked upon with suspicion. Conservation is a word that carries unwelcome connotation to oil men. Many injustices, if not illegalities, have been perpetrated in its name. The industry was conscious of a brilliant record of achievement in meeting a continuously expanding demand despite recurrent warning of the approaching exhaustion of the oil fields. It was also, and properly, conscious of a constantly improving technic operating to reduce actual waste of oil. There was furthermore the general popular reaction against Government meddling in business and the special harassment felt by the oil industry over repeated and futile Government investigations, in the main only serving political ends.

A. P. I. Report

This feeling of doubt and suspicion was not decreased when the first appointment that the new board announced was that of a "general counsel," an eminent lawyer not known to have any particular knowledge of or competence in the law as related to petroleum, but an important factor in the local political situation of one of the states. The anticipation of harassment was not decreased when the technical committee of the board embarked upon another round of circulation of questionnaires such as will be remembered as one of the horrors of the war. The American Petroleum Institute took counsel and out of that was born the much-discussed book, "American Petroleum" now almost one of the non-fiction best sellers. We have characterized it as clearly the most comprehensive report ever brought together on the supply and demand for petroleum in the United States. Despite, however, the evident value of the book as a storehouse of data it tended for a time to widen rather than to heal the growing breach between the oil men and the Government. The summary of conclusions made by the committee of eleven, while only one of many interpretations made possible by the assembly of the great body of data, was considered by some to be unfair and not to reflect correctly the facts stated in the text. It was even, in private conversation, characterized as a smoke screen and as a back-fire.

Fortunately, better counsels have prevailed. The Conservation Board has shown no disposition to convert itself into a prosecuting or a persecuting or-

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ganization for political purposes. On the contrary it has seemed genuinely interested in the technical and economic facts of the situation. The general counsel proves to be quite a man, more a student than a striver for political advantage. The technical committee, fortunately or the reverse, is snowed under an avalanche of papers, and private conferences have brought about a public hearing at which, as stated at the beginning, the best of temper and spirit prevailed.

Underlying Facts

The underlying facts, so far as they can be summarized in a few words are about as below: (1) Oil is a wasting asset and our present domestic supply is only maintained by continual discovery of new pools. How long this can be kept up is a matter of opinion but the heavy and increasing demands made on the oil fields create a proper concern in the public mind and at least in the back of the minds of the thinking men of the industry. (2) Present methods of production leave much of the larger part of the oil in the ground. Part of this can and will be recovered by improved methods and one of the hopeful signs is the quickened interest of the oil producers in such methods. It is coming to be recognized that wasting gas and gas pressure is indirectly wasting oil. (3) The uncertainty as to supply and the interpretation of the law that has so far obtained operates to force quick exploitation of any field once it is discovered. The economic effect of this is the periodic flooding of the market for crude and the consequent forcing of the oil into less essential uses, notably its substitution for coal. (4) The fuel oil market is now the cushion of the oil industry. In times of high demand for gasoline a larger portion of the oil is cracked. When gasoline demand is low more oil, if it be on the market, is sold for fuel. (5) The use of oil for fuel tends to build up a market for it that is based upon convenience and special advantages and is not merely an expression of the relative price of heat units obtained from oil and from coal. Possibilities of a Frankenstein are foreshadowed here. (6) Substitutes from coal and oil shale are possible but how, when, and to what extent they will become commercially practical is not yet determined and possibly not enough thought is being devoted to this phase of the problem. (7) Price will effect adjustment of industry as conditions change, but reliance on that factor alone may involve such temporary or permanent hardship upon large portions of the buying public as will bring down on the industry an amount of odium too costly to bear.

These are a few of the larger problems and of the conditions faced by the petroleum industry. It is refreshing to see them recognized as existent and that constructive thought is being devoted to them by its leaders and by the Government departments most directly concerned.

ALASKA'S OIL RESERVE

The topographic and geologic mapping of Naval Petroleum Reserve No. 4 at the northernmost point of the United States will require a further season's work by Dr. Philip S. Smith, the Geological Survey's chief Alaskan geologist, and Gerald FitzGerald, topographic engineer, with two camp hands. Doctor Smith's party has left Nenana, on the Government railroad in the heart of Alaska, and is proceeding by dog team along the mail trail, down Yukon River, and on for over 600 miles to the town of Kotzebue, just north of the Arctic Circle, where the party will proceed with freight teams northwestward along the Arctic shore line 100 miles more, to the mouth of Kivalina River. At this point the work will commence, although the temperature will be far below zero. The men will proceed northeastward across an unknown country, completing their work at the town of Wainwright, where they expect to obtain water transportation back to Nome. The party will probably not return to Seattle before October.

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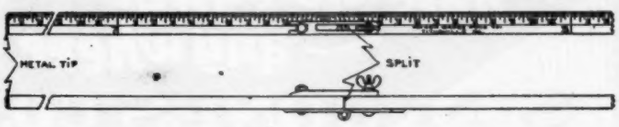

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KENTUCKY OIL MEN VICTORS IN TAX CASE

LEXINGTON, Ky., Apr. 17.—A Federal Court decision which will save Kentucky oil men $200,000 to $275,000 a year in taxes, if it is upheld in the United States Supreme Court, was received here by Deputy Clerk Spencer L. Finnell.

The State of Kentucky will lose from $12,000 to $15,000 a month as a result of the ruling, and various counties of the state will suffer losses totaling half that amount.

The decision was handed down by District Judge A. M. J. Cochran, of the Eastern District of Kentucky; and Federal Judges A. C. Denison and Charles H. Moorman, of the United States Circuit Court of Appeals in the case of the Eastern Gulf Oil Co. vs. the Kentucky State Tax Commission and Frank E. Daugherty, attorney general of Kentucky.

The Federal judges issued an interlocutory injunction restraining the State Tax Commission and the attorney general from attempting to collect the 1 per cent ad valorem tax on crude oil, delivered to pipe line companies, holding that Chapter 23, Acts of 1918, which provided for the tax, is in violation of Federal laws regulating interstate commerce.

Crude oil delivered to a pipe line company for transportation out of the State is an interstate shipment and as such is not subject to State taxation, the opinion held. The tax in question was held not to be an occupational tax.

The act has been attacked in several suits in the State courts of Kentucky, but was held to be constitutional by the Kentucky Court of Appeals in a decision handed down in a suit brought by the Swiss Oil Corp., of Lexington.

E. L. McDonald, general counsel for the Swiss Oil Corp., said the suit brought by that company had been appealed to the United States Supreme Court, where it is now pending.

Mr. McDonald said the State had been collecting about $12,000 to $15,000 a month from Kentucky oil producers under the act, which also authorized counties to levy a tax of half the State tax or one-half of 1 per cent, making a total ad valorem tax of 1½ per cent.

MEXICAN OUTPUT INCREASES

Mexican crude production in the week ended March 27 increased 10,143 barrels daily, averaging 282,714 for the period. Light oil output increased 11,000 barrels daily at 173,714.

Mexican Petroleum Co. increased its light oil output 9,428 barrels daily and Mexican Eagle Oil Co. 1,428 barrels daily during the week.

Production (in barrels) by companies for the two weeks, with comparison of a year ago, follows:

	—Mar. 27—		—Mar. 28, '25—	
	Light	Heavy	Light	Heavy
M. Pete	270,000	275,000	555,000	397,000
Std. N. J.	19,000	198,000	33,000	501,000
M. Eagle	226,000	3,000	127,000	7,000
M. Seab.	15,000	144,000	30,000	219,000
R. Dutch	8,000	154,000	9,000	227,000
Nat. Rys.	.....	120,000	.....	*.....
Gulf Oil	46,000	43,000	55,000	29,000
Sinclair	3,000	88,000	4,000	182,000
Atl. Gulf	23,000	.....	26,000	.....
Texas Co.	6,000	7,000	9,000	9,000
Misc.	47,000	164,000	56,000	117,000
Totals	763,000	1,216,000	884,000	1,698,000
Dly. Avg.	109,000	173,714	126,286	242,571

*Unavailable.

GALENA SIGNAL OIL CHANGES IN OFFICERS

FRANKLIN, Pa., Apr. 17.—William P. Westcott and J. C. Tipton have resigned as directors of Galena Signal Oil Co. and C. W. Hochette of New York and J. C. O'Connor of Franklin have been elected to succeed them. Mr. Westcott retired from active service and Mr. Tipton continues as manager of the export department. Mr. Wescott also resigned as vice president and treasurer, and George A. Barnes of New York was elected vice president and Mr. Hochette treasurer. The vacancy caused by the resignation of Leon E. Stull as assistant treasurer was filled by election of J. French Miller in addition to his duties as secre-

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tary. J. E. Linahen, vice president, has been made head of the sales and service department, which will be concentrated in Franklin. C. A. Miller has been made head of the purchasing department to succeed R. P. Byles, resigned. E. M. Hedley, supervising service engineer, has been retired from active service under company's plan of annuities.

HAL KELLEHER GOES TO AMERICAN REFINING CO.

Harold Kelleher, for the three years head of The Texas Company's lease and land department for the north and central Texas division, has resigned to take a similar position with the American Refining Co. of Wichita Falls. He will succeed W. W. Silk, whose other interests made it necessary for him to surrender the position.

"Hal" Kelleher, a native of Bradford, Pa., was an operator for the Postal Telegraph Co., in Pittsburgh, in the earlier years of his manhood, but he was meant to be an oil man, and, like his father, F. M. Kelleher, had done before him, he quit telegraphy and went down to Texas, first as a scout for The Texas Company, then chief scout and later head of the land department. Mr. Kelleher is succeeded by W. B. Clement, who was head of The Texas Company's engineering department at Wichita Falls, and Mr. Clement is succeeded by C. B. Brotherton, a field engineer.

FRANKLIN SUCCEEDS CAMERON

OKLAHOMA CITY, Okla., Apr. 17.—Wirt Franklin, Ardmore oil operator, has been elected to succeed the late John M. Camerson as president of the Cameron Refining Co. at Ardmore. Daniel Corcoran will continue as general manager and Edward Galt as manager of the production department. The company operates a refinery at Ardmore.

LEGAL

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF KANSAS, THIRD DIVISION

In the Matter of James L. White, a Bankrupt. IN BANKRUPTCY NO. 1809.

NOTICE OF SALE BY TRUSTEE IN BANKRUPTCY

Notice is hereby given by the undersigned, T. R. Evans, the duly appointed, qualified and acting Trustee, in the above entitled matter, that under and by virtue of an Order in said matter duly entered by Harry W. Fisher, Referee in Bankruptcy, at Fort Scott, Kansas, on the 6th day of April, 1926,—he will, upon the dates, at the hours and the places as hereinafter described, receive bids for sale of such of the assets of said Bankrupt Estate as are hereinafter set out. It being expressly provided by the Order of the Referee herein, that any and all sales made hereunder, are subject to the approval of the Referee; and that the Referee expressly reserves the right to reject any and all bids. Each and all of said sales to be made upon the terms of cash payment to the undersigned Trustee for the amount of the bid by the said Trustee accepted as his highest bid for any of the property so to be sold; which said money so paid to the Trustee shall, in each several and separate instance—if such sale be not approved by the Referee—be forthwith upon such order of disapproval, returned to the bidder by said Trustee;—

One certain standard drilling rig, together with tools and equipment, now located upon the McCullough Lease, covering the Bradfield land, Lyon County, Kansas, approximately Eleven (11) Miles Northwest of Madison, Kansas. This sale to be had at said lease, Monday, April 26th, at 10 o'clock A. M.

One certain No. 28 Star Drilling Machine, with 30 H. P. Boiler, and all equipment belonging thereto, now located upon the South Half (S½) of the Southeast Quarter (SE¼) of Section No. Thirty-one (31), Township No. Twenty-four (24) South, Range No. Eleven (11) East, Greenwood County, Kansas, on the premises known as the Wagoner Farm. This sale to be had at said lease Tuesday, April 27th, at 10 o'clock A. M.

One No. 28 Special Star Drilling Machine, with all equipment complete, located on the Lassen Lease, upon the Rogers Farm, in Woodson County, Kansas, located Three and a half (3½) Miles Southeast of Quincy, and Four (4) miles Northeast of Toronto. This sale to be had at said lease, Wednesday, April 28th, 1926, at 10 o'clock A. M.

As to each of said rigs and the tools and equipment to be sold with the same,—detailed lists to such property as prepared in the appraisement had herein, may be examined by any interested bidders, at the office of T. R. Evans, Trustee, or at the office of Finley, Allen & Dunham, attorneys for the Bankrupt, at Chanute, Kansas.

T. R. EVANS, Trustee, Chanute, Kansas.
FINLEY, ALLEN & DUNHAM, Attorneys for Bankrupt, Chanute, Kansas.

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TURNER VALLEY FIELD THOUGHT TO BE LARGER

CHATHAM, Ont., Apr. 17.—Dr. John A. Allan, professor of geology at the University of Alberta, is investigating the Turner Valley and Moose Mountain Fields near Calgary. He expressed confidence that the limestone formation from which Royalite No. 4 secures its naphtha production will be found to extend generally over the Turner Valley Field.

"There is no reason to believe that the limestone hit by the Royalite is limited in its area," said Doctor Allan. "We have found outcrops of the same formation at the Spray Lakes, in the Bow Valley, and on the Blackstone River, northwest of Nordegg. It is the same porous rock."

Of the Wainwright Field Doctor Allan was still optimistic that the structure, which is larger than generally known, will produce a higher grade of crude. He believes the field will be proved by 2,500-foot wells. Drilling will be easy, since the formations are flatter than in the foothills and the dips very gentle.

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LEGAL

DEPARTMENT OF THE INTERIOR
U. S. LAND OFFICE
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Notice is hereby given that the following described tracts in the Caddo oil field, Louisiana, are offered for oil and gas lease under Sec. 17 of the act of February 25, 1920 (41 Stat., 437), at the standard royalty fixed for departmental leases varying from 12½ to 33 1/3% of the oil produced, depending upon daily production per well, subject to reduction at discretion of lessor when average daily production of any well shall not exceed 10 barrels per day; and 12½ to 16 2/3% of casinghead gasoline and an annual rental of $1.00 per acre payable in advance which will be credited against royalties as they accrue for that year.

TRACT A: Lot 4, Sec. 5 (14.10 acres);
TRACT C: Lot 3, Sec. 5 (14.12 acres);
TRACT D: Lot 3, Sec. 4 (11.88 acres);
TRACT E: Lot 3, Sec. 3 and Lots 4 and 5, Sec. 4 (25.91 acres);
TRACT F: Lots 2 and 3, Sec. 3 (32.82 acres);
TRACT N: Frl. Sec. 20 (37.83 acres);
TRACT O: Lots 1 and 3, Sec. 32 (91.56 acres);
TRACT P: Lot 5, Sec. 32 (44.21 acres);
TRACT Q: Lot 1, Sec. 25 (8.90 acres);
TRACT R: Lot 1, Sec. 36 (9.12 acres);
TRACT S: Lot 2, Sec. 36 (4.69 acres).

All the above tracts are situated in T. 20 N., R. 16 W.

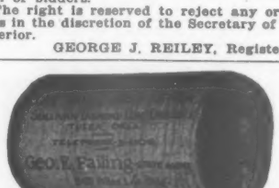
TRACT T: S½ NE¼ and W½ SE¼ Sec. 31 (160 acres) T. 20 N., R. 15 W.
TRACT U: SE¼ SE¼ Sec. 28 (39.98 acres), T. 22 N., R. 15 W.
TRACT V: SE¼ Sec. 9 (160.20 acres), T. 21 N., R. 16 W.

Said individual tracts will be offered at public auction at the Federal Court Room, Post Office Building, Shreveport, Louisiana, at 10 a. m. on April 21, 1926, and sold to the qualified bidder offering the highest bonus for lease of each tract at the stated royalty. One person, association or corporation may purchase not exceeding 640 acres. The successful bidder must deposit on day of sale a certified check upon a solvent bank, or cash, for one-fifth of the amount of each bid and file the showing of qualifications to receive a lease as required by Sec. 15 of Circular 672 oil and gas regulations, as to citizenship and ownership in other permits and leases. The remaining four-fifths of the bid must be paid prior to issuance of lease.

The bidders are warned against violation of the provisions of Sec. 59 of the U. S. Criminal Code approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders.

The right is reserved to reject any or all bids in the discretion of the Secretary of the Interior.

GEORGE J. REILEY, Register.



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American Radiator Co.
Braun, C. F., & Co.
Campbell, J. A.
Cooper, C. & G. Co.
Griscom-Russell Co.
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.

Absorption Towers—
Hope Engineering & Supply Co.
National Gas Products Co.
Newton Process Mfg. Co.

Acetylene Apparatus—
Oxweld Acetylene Co.

Acetylene—Dissolved—
Prest-O-Lite Co., Inc.

Acetylene in Cylinders—
Prest-O-Lite Co., Inc.

Agitators—
Chicago Bridge & Iron Works.
Kaw Boiler Works Co.
Petroleum Iron Works Co.

Air Compressors (See Compressors—Air)—

Alloy Steel (See Steel—Alloy)—

All-Steel Drilling Rigs (See Rigs)

Aluminum Bronze Powder for Paint—
Aluminum Co. of America.

Ammonia—
Mathieson Alkali Works, Inc.

Anchor Clamps (See Clamps)—

Antimonial Leads—
Eagle Picher Lead Co.

Apparatus—Electric—
Westinghouse Electric & Mfg. Co.

Apparatus—Motor Control—
Westinghouse Electric & Mfg. Co.

Appraisers—
American Appraisal Co.

Arches—Flat Suspended—
Brady Conveyor Corp.

B

Babbitts—
Eagle-Picher Lead Co.
Ryerson, Jos. T. & Sons, Inc.

Back Up Tongs (See Tongs)—

Bailers—
Oil Well Supply Co.
Spang & Co.

Balls and Seats—
Axelson Machine Co.
Hough, Charles N., Mfg. Co.
Norris Brothers, Inc.
Northrup Equipment Co.

Balls—Bronze—
Atlas Ball Co.
Hoover Steel Ball Co.

Balls—Steel—
Atlas Ball Co.
Hoover Steel Ball Co.
Strom Steel Ball Co.

Band Wheels—Steel—
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Moore, Lee C. & Co., Inc.
Parkersburg Rig & Reel Co.

Barrels—
Petroleum Iron Works Co.

Batteries—
National Carbon Co.

Bearings—Roller—
American Roller Bearing Co.
Timken Roller Bearing Co.

Bearings—Thrust—
Timken Roller Bearing Co.

Belting—
Bridgeport Machine Co.
Continental Supply Co.
Fenwick-Reddaway Mfg. Co.
Frick-Reid Supply Co.
Imperial Belting Co.
International Supply Co.
Lufkin Foundry & Machine Co.
Murray Rubber Co.
Stanley Belting Corp.

Belting—Rubber—
Bovaird Supply Co.
Goodyear Tire & Rubber Co.
United States Rubber Co.

Belt Lacing—
Flexible Steel Lacing Co.

Bits—Disc—
U. S. Tool Co.

Bits—Fish Tail—
Federal Supply Co.
Lucey Mfg. Corp.

Bits—Rotary Disc—
Hughes Tool Co.

Bits Rotary Rock—
Hughes Tool Co.
Reed Roller Bit Co.

Bit Steel (See Steel—Bit)—

Bleaching Powder—
Mathieson Alkali Works, Inc.

Blow-off Valves (See Valves)—

Blowout Preventer—
Regan Forge & Engineering Co.
Stearns-Roger Mfg. Co.

Blowpipes—
Oxweld Acetylene Co.

Boiler Feed Pumps (See Pumps)

Boilers—Horizontal Return Tubular—
Brownell Co., The
Kewanee Boiler Co.
Vogt, Henry, Machine Co.

Boilers—Oil Country—
Bovaird & Seyfang Mfg. Co.
Brideport Machine Co.
Brownell Co., The
Coatesville Boiler Works.
Continental Supply Co.
Donovan Boiler Works.
Frick-Reid Supply Co.
International Supply Co.
Kewanee Boiler Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.
Pattin Bros. Co.
Republic Supply Co.
Titusville Iron Works.

Bolted Tank (See Tanks)—

Bolts and Nuts—
Sheffield Steel Corp.

Bolt Threading Machines—
Landis Machine Co
Oster Mfg. Co.

Bottles—Glass
Illinois Glass Co.

Box and Pin Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Braces—Tool—
Dunn Mfg. Co.

Break Out Tongs (See Tongs)—

Briquetting Machines—
Simplex Equipment Co.

Bronze Valve (See Valves—Brass and Bronze)—

Buildings—Metal, Sectional (All Types)—
Austin Co.
Braden Co.
Butler Mfg. Co.
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Swartwout Co.
Truscon Steel Co.

Bulk Station Tanks (See Tanks)

Bull Ropes—
Ajax Rope Co., Inc.
Columbian Rope Co.
Plymouth Cordage Co.
Wall Rope Works, Inc.

Bull Wheels—Steel—
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Moore, Lee C. & Co., Inc.
Parkersburg Rig & Reel Co.

Burners—Gas—
Okmulgee Boiler & Welding Works.

Burners—Oil—
Baker Motors, Inc.
Continental Supply Co.
Reid, Joseph, Gas Engine Co.

Bushings—Rotary Drive—
Wilson Oil Tools Corp.

C

Cable Bit Steel—
Andrews Steel Co.
Federal Supply Co.
Heppenstall Forge & Knife Co.

Cables—Drilling, Manila—
Ajax Rope Co., Inc.
Columbian Rope Co.
Continental Supply Co.
Frick-Reid Supply Co.
Plymouth Cordage Co.
Wall Rope Works, Inc.

Cables—Steel—
Ajax Rope Co., Inc.
American Cable Co.
Black Steel & Wire Co.
Broderick & Bascom Rope Co.
Continental Supply Co.
Frick-Reid Supply Co.
Hazard Mfg. Co.
Leschen, A. & Sons Rope Co.
Longhart Supply Co.
Murray Tool & Supply Co.
National Supply Co.
Republic Supply Co.
Wickwire-Spencer Steel Corp.

Calf Rope—
Ajax Rope Co., Inc.

Calf Wheels—Steel—
International Derrick & Equipment Co.
Moore, Lee C. & Co., Inc.

Cannon—Oil Field—
Braden Co.

Cans—Water—
Gott, H. P. Mfg. Co.

Capping Steel—
Andrews Steel Co.

Carbon—Black Diamond—
Diamond Drill Carbon Co.
Patrick, R. S.

Cars—Tank—
American Car & Foundry Co.
General American Tank Car Corp.
Shippers' Car Line, Inc.

Cars—Tank, Leased—
American Car & Foundry Co.
North American Car Co.
Shippers' Car Line, Inc.

Casing—
Bovaird Supply Co.
Continental Supply Co.
Emsco Derrick & Equip. Co.
Jarecki Mfg. Co.
National Supply Co.
National Tube Co.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Superior Tube Co.

Casing—Wrought Iron—
Byers, A. M. Co.
Reading Iron Co.
South Chester Tube Co.

Casing Elevators (See Elevators, Casing and Tubing)—

Casinghead Gasoline Equipment—(See Natural Gasoline Plant Equipment)—

Casing Heads—
Arbon, Paul, & Co.
Dresser, S. R., Mfg. Co.
Kansas City Hay Press Co.
Oil Well Improvements Co.

Casing Lines—
Ajax Rope Co., Inc.

Casing Packers (See Packers)—

Casing Pulleys (See Pulleys)—

Casing Shoes—
Baker Casing Shoe Co.
Bartlesville Supply Co.
Bridgeport Machine Co.
Guiberson Corp.
Oil Well Supply Co.

Casing Tongs (See Tongs)—

Castings—Alloy Steel—
Ohio Steel Foundry Co.
Sivyer Steel Casting Co.

Castings—Brass—
Progressive Brass Mfg. Co.

Castings—Chrome Nickel Steel—
Sivyer Steel Casting Co.

Castings—Corrosion Resisting Non Ferrous—
Hills-McCanna Co.

Castings—Electric Steel—
Ohio Steel Foundry Co.
Sivyer Steel Casting Co.

Castings—Grey Iron—
Ajax Iron Works.
American Car & Foundry Co.
Cunningham Co.
Gaso Pump & Burner Mfg. Co.
Pittsburgh Boiler & Machine Co.

Castings—Steel—
Ajax Iron Works.
Chicago Steel Foundry Co.
Ohio Steel Foundry Co.
Sivyer Steel Casting Co.

Cement—Fire and High Temperature—
Botfield Refractories Co.

Cement—Portland—
Monarch Cement Co.

Centrifugal Pumps (See Pumps)

Chain Pipe Tongs (See Tongs)—

Chains—Conveying—
Chain Belt Co.
Link-Belt Co.

Chains—Oil Well—
Baldwin Chain & Mfg. Co.
Chain Belt Co.
Link-Belt Co.
Lufkin Fdy. & Machine Co.

Chains—Power Transmission—
Baldwin Chain & Mfg. Co.
Chain Belt Co.
Link-Belt Co.

Check Valves (See Valves)—

Chemical Glassware for Laboratory Use (See Glassware)—

Chemical Treatment Crude Oil Emulsion—
Barnickel, Wm. S., & Co.

Chlorine—Liquid—
Mathieson Alkali Works, Inc.

Chrome Nickel Steel Castings (See Castings)—

Circulating Heads—
Wilson Oil Tools Corp.

Clamps—Anchor—
Bartlesville Supply Co.

Clamps—Belt—
Federal Supply Co.

Clamps—Collar Leak—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Clamps—Hoisting—
Newton Process Mfg. Co.

Clamps—Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Clamps—River—
Dresser, S. R., Mfg. Co.
Gaso Pump & Burner Mfg. Co.

Cloths—Wiping—
Nye Tool & Machine Works.

Clutches—Friction, Plate Type—
Twin Disc Clutch Co.

Cocks—Brass and Iron—
Lunkenheimer Co.
Walworth Mfg. Co.

Cocks—Plug—
Homestead Valve Mfg. Co.

Cocks—Water Gauge—
Smith Separator Co.

Coils and Bends—Pipe—
Harrisburg Pipe & Pipe Bending Co.
Midwest Piping & Supply Co.

Collar Leak Clamps—(See Clamps)

Compounds—Boiler—
Dearborn Chemical Co.

Compounds—Joint Sealing—
Key Boiler Equipment Co.

Compressor Cylinders (See Cylinders—Compressor)—

Compressors—Air—
Bessemer Gas Engine Co.
Clark Brothers Co.
Cooper, C. & G. Co.
Gardner Governor Co.
Ingersoll-Rand Co.
Sullivan Machinery Co.

Compressors—Ammonia—
Carbondale Machine Co.
Cooper, C. & G., Co.

Compressors—Direct Connected Motor and Gas Engine Driven
Buffalo Gasolene Motor Co.
Clark Brothers Co.
Cooper, C. & G., Co.
Miller Improved Gas Engine Co.

Compressors—Direct Driven Air and Gas—
Bessemer Gas Engine Co.
Miller Improved Gas Engine Co.

Compressors—Gas—
Bessemer Gas Engine Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Cooper, C. & G., Co.
Hope Engineering & Supply Co.
Ingersoll-Rand Co.
National Transit Pump & Machine Co.
Worthington Pump & Machinery Corp.

Condenser Boxes—
Kaw Boiler Works Co.
Petroleum Iron Works Co.

Condensers—
American Radiator Co.
Chicago Pneumatic Tool Co.
National Gas Products Co.
Ross Heater & Mfg. Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.

Consulting and Contracting Engineers (See Engineers)—

Controllers—Liquid Level—
Fisher Governor Co., Inc.
Newton Process Mfg. Co.
Smith Separator Co.

Controllers—Pressure—
Smith Separator Co.

Controllers—Temperature —
Brown Instrument Co.
Foxboro Co., Inc.
Taylor Instrument Co.

Conveying & Elevator Machinery—
Brady Conveyors Corp.

Conveyors—Bucket and Belt—
Brady Conveyors Corp.

Conveyors—Pneumatic—
Brady Conveyors Corp.

Conveyors—Portable Belt—
Barber-Greene Co.

Cooling Towers—Atmospheric—
Braun, C. F. & Co.
National Gas Products Co.

Cordage—
Bridgeport Machine Co.
International Supply Co.
Plymouth Cordage Co.

Core Drilling—
Longyear, E. J., Co.
Mineral Exploration Co.

Core Drills—Diamond—
Longyear, E. J., Co.
Sullivan Machinery Co.

Coring Tools—
Reed Roller Bit Co.
Wilson Oil Tools Corp.

Couplings—Flexible—
Nuttall, R. D., & Co.
Victaulic Co. of America.

Couplings—Plain End Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Couplings—Seamless Steel—
Harrisburg Pipe & Pipe Bending Co.
Superior Tube Co.

Couplings—Steel for Casing, Line Pipe, Drill Pipe and Tubing—
Dayton Pipe Coupling Co.
Smith, A. O., Corp.

Cracking Processes—
Graver Corp.
Kellogg, M. W., Co.
Universal Oil Products Co.

Crawler Treads—
Full Crawler Co.

Crown Blocks—
International Derrick & Equipment Co.
Lucey Mfg. Corp.
Lufkin Foundry & Machine Co.
Moore, Lee C., & Co., Inc.
Parkersburg Rig & Reel Co.

Cups—Composition—
Williamsport Development Co.

Cups—Leather—
Auer, C. A.

Cutters—Pipe—
Borden Co.
Nye Tool & Machine Works.
Trimont Mfg. Co.

Cylinders—Compressor—
Hope Engineering & Supply Co.

Cylinder Stocks—
Barnsdall Refining Co.
Pure Oil Co.
Texas Company, The

D

Dehydrating Process—
Barnickel, Wm. S., & Co.

Dephlegmators—
National Gas Products Co.
Newton Process Mfg. Co.
Smith, A. O., Corp.

Depletion Reports—
American Appraisal Co.

Derricks—Steel—
Emsco Derrick & Equip. Co.
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Moore, Lee C., & Co., Inc.
O'Brien Steel Construction Co.
Parkersburg Rig & Reel Co.
Superior Tube Co.

Derricks—Turnbuckle—
National Turnbuckle Derrick Co.

Diamond Core Drills (See Core Drills—Diamond—

Diamonds for Core Drilling (See Carbon—Black Diamond)—

Die Heads—Automatic Screw Cutting—
Landis Machine Co.

Die Heads—Bolt Threading—
Bignall & Keeler Machine Works.
Landis Machine Co.

Die Heads—Stationary Pipe Threading—
Bignall & Keeler Machine Works.
Cox & Sons Co., The
Landis Machine Co.
Standard Engineering Co.

Diesel Engines (See Engines)—

Dies—Pipe Threading—
Bignall & Keeler Machine Works.
Cox & Sons. Co., The
Landis Machine Co.
Nye Tool & Machine Works.
Standard Engineering Co.

Differential Pressure Recorders (See Recorders)—

Direct Driven Pumps (See Pumps)

Disc Bits (See Bits—Disc)—

Dissolved Acetylene (See Acetylene)—

Ditchers—Pipe Line—
Barber-Greene Co.
Buckeye Traction Ditcher Co.

Draw Works—
Lucey Mfg. Corp.
Lufkin Foundry & Machine Co.
National Supply Co.
Titusville Iron Works Co.

Drillers Hose (See Hose)—

Drilling and Fishing Tools—
Acme Fishing Tool Co.
Baash-Ross Tool Co.
Bovaird & Seyfang Mfg. Co.
Bovaird Supply Co.
Bridgeport Machine Co.
Brown Tool Co., Inc.
Burns Tool Co.
Continental Supply Co.
Cushing, Tim, Tool Co.
Emsco Derrick & Equip. Co.
Hinderliter Tool Co.
Hughes Tool Co.
International Supply Co.
Larkin & Co.
Leidecker Tool Co.
Lucey Mfg. Corp.
Murray Tool & Supply Co.
Oil Well Supply Co.
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Spang & Co.
Star Drilling Machine Co.
U. S. Tool Co.

Drilling Engines (See Engines)—

Drilling Equipment—
Clark Brothers Co.
Hughes Tool Co.
O'Brien Steel Construction Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.
Reed Roller Bit Co.
Star Drilling Machine Co.

Drilling Gate Valves (See Valves)

Drilling Machines—
Leidecker Tool Co.
Oil Well Supply Co.
Star Drilling Machine Co.

Drilling Tools (See Drilling and Fishing Tools)—

Drilling Valves (See Valves)—

Drills—Portable Air—
Chicago Pneumatic Tool Co.

Drive Shoes—
Bartlesville Supply Co.
Larkin & Co.

Drop-Forged Wrenches (See Wrenches)—

Drops and Seats—
Norris Brothers, Inc.

Drums (See Barrels)—

Dynamos—
Westinghouse Electric & Mfg. Co.

E

Electrical Equipment—
Fairbanks-Morse & Co.
Pyle National Co.
Wico Electric Co.

Electric Apparatus (See Apparatus—Electric)—

Electric Drilling Equipment—
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.

Electric Steel Castings—See Castings—Electric Steel)—

Elevators—Casing and Tubing—
Bovaird Supply Co.
Bridgeport Machine Co.
Dunn Mfg. Co.
Lucey Mfg. Corp.
Oil Well Supply Co.
Wilson Oil Tools Corp.

Elevators—Rod—
B. & A. Specialty Co.
D & B Pump & Supply Co.
Dunn Mfg. Co.

Enamels—
Arco Company, The
Sherwin-Williams Co.

Engineers—Consulting and Contracting—
Brooks Engineering Corp.
Hope Engineering & Supply Co
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Power Specialty Co.
Westcott & Greis.
Widdell Engineering Co.

Engineers—Fire Protection—
Brooks Engineering Corp.
Foamite-Childs Corp.
Engineers—Oil Buildings—
Austin Co.
International Derrick & Equipment Co.
Engineers—Oil Treating—
Barnickel, Wm. S., & Co.
National Gas Products Co.
Engines—Crude Oil—
Continental Supply Co.
Western Machinery Co.
Engines—Diesel—
Bessemer Gas Engine Co.
Busch-Sulzer Bros. Diesel Engine Co.
Foos Gas Engine Co.
McIntosh & Seymour Corp.
Western Machinery Co.
Worthington Pump & Machinery Corp.
Engines—Drilling—
Ajax Iron Works.
Beaver Manufacturing Co.
Bessemer Gas Engine Co.
Bovaird & Seyfang Mfg. Co.
Brownell Co., The
Buda Co.
Buffalo Gasolene Motor Co.
Clark Bros. Co.
Climax Engineering Co.
Franklin Valveless Engine Co.
Hercules Motor Corp.
Lufkin Foundry & Machine Co.
Pattin Bros. Co.
Power Mfg. Co.
Republic Supply Co.
Titusville Iron Works Co.
Engines—Gas—
Beaver Manufacturing Co.
Bessemer Gas Engine Co.
Bruce-MacBeth Engine Co.
Buda Co.
Buffalo Gasolene Motor Co.
Chicago Pneumatic Tool Co.
Clark Bros. Co.
Climax Engineering Co.
Continental Supply Co.
Cooper, C. & G., Co.
Emsco Derrick & Equipment Co.
Foos Gas Engine Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hope Engineering & Supply Co.
Ingersoll-Rand Co.
International Supply Co.
Jones, S. M., Co.
Marion Mch., Fdy. & Supply Co.
Miller Improved Gas Engine Co.
National Supply Co.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Titusville Iron Works Co.
Waukesha Motor Co.
Western Machinery Co.
Engines—Gasoline—
Beaver Manufacturing Co.
Buda Co.
Buffalo Gasolene Motor Co.
Continental Motors Corp.
Fairbanks-Morse & Co.
International Harvester Co. of America.
Novo Engine Co.
Waukesha Motor Co.
Western Machinery Co.
Engines—Oil—
Bessemer Gas Engine Co.
De La Vergne Machine Co.
Fairbanks-Morse & Co.
Franklin Valveless Engine Co.
International Harvester Co. of America.
Ingersoll-Rand Co.
McIntosh & Seymour Corp.
National Supply Co.
Oil Well Supply Co.
Power Mfg. Co.
Reid, Joseph, Gas Engine Co.
Western Machinery Co.
Engines—Rotary—Steam—
Baker Motors, Inc.
Engines—Semi-Diesel, Oil—
Chicago Pneumatic Tool Co.
Engines—Steam—
Ajax Iron Works.
Baker Motors, Inc.
Frick-Reid Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.
Evaporators—
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Extinguishers—Fire—
Amdyco Corp.
Foamite-Childs Corp.

F

Fabricators for Gasoline Plants and Refineries—
National Gas Products Co.
Stearns-Roger Mfg. Co.
Filters—Oil—
Burt Mfg. Co.
Fishing Tools (See Drilling and Fishing Tools)—
Fittings—Dropped Forged Steel—
Vogt, Henry, Machine Co.
Fittings—Malleable & Cast Iron—
Bovaird Supply Co.
Crane Co.
Frick-Reid Supply Co.
Kelly & Jones Co.
Walworth Mfg. Co.
Fittings—Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Gaso Pump & Burner Mfg. Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Kennedy Valve Mfg. Co.
Lufkin Foundry & Machine Co.
Metric Metal Works.
Oil Well Supply Co.
Reading Steel Casting Co.
Republic Supply Co.
United Iron Works, Inc.
Victaulic Co. of America
Fittings—Steel—
Dayton Pipe Coupling Co.
Kelly & Jones Co.
Kerotest Mfg. Co.
Ohio Steel Foundry Co.
Flanges—Brass, Iron and Steel—
Jefferson Union Co.
Kelly & Jones Co.
Metric Metal Works.
Flange Unions—
Gaso Pump & Burner Mfg. Co.
Flashlights—
National Carbon Co.
Floating Roofs and Decks—
Chicago Bridge & Iron Works.
Floodlights—
Pyle-National Co.
Forging Billets—
Andrews Steel Co.
Harrisburg Pipe & Pipe Bending Co.
Heppenstall Forge & Knife Co.
Forgings—
Champion Machine & Forging Co.
Milwaukee Forge & Machine Co.
Friction Clutch Pulleys (See Pulleys)—
Fuel Oil (See Oil—Fuel)—
Fuller's Earth—
Sinclair Refining Co.

G

Gas Compressors (See Compressors—Gas)—
Gas Engines (See Engines—Gas)
Gas Holders—
Chicago Bridge & Iron Works.
Gaskets—
Garlock Packing Co.
McCord Radiator & Mfg. Co.
Gaskets—Fibre—
Durabla Mfg. Co.
Gas Masks & Safety Appliances—
Mine Safety Appliance Co.
Gas Meters (See Meters)—
Gas Oil (See Oil—Gas)—
Gasoline—
Berry's James B. Sons Co.
Crown Central Petroleum Co.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Skelly Oil Co.
Gasoline—Natural—
Chestnut & Smith Corp.
National Gas Products Co.
Warren Petroleum Co.
Gasoline Plant Equipment—
Bessemer Gas Engine Co.
Clark Brothers Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Widdell Engineering Co.
Gas Regulator Casinghead—
Davis, G. M., Regulator Co.
National Gas Products Co.
Gas Scrubbers—
National Gas Products Co.
Newton Process Mfg. Co.
Gauge Glass—High Pressure—
Durabla Mfg. Co.
Gauge Poles—
Marsh Gauge Pole Co.
Gauges—Automatic Tank—
Brooks Engineering Co.
Gauges—Pressure and Vacuum—
Bristol Co.
Equitable Meter & Mfg. Co.
Metric Metal Works.
Gauges—Test—
Equitable Meter & Mfg. Co.
Metric Metal Works.
Gear Driven Pumps (See Pumps)
Gears—Cut—
Nuttall, R. D., & Co.
Gears—Reduction—
Emsco Derrick & Equipment Co.
Nuttall, R. D., & Co.
Gears—Reverse—
Emsco Derrick & Equipment Co.
Generators—
Westinghouse Electric & Mfg. Co.
Generators—Acetylene—
Oxweld Acetylene Co.
Generators—Steam—
Baker Motors, Inc.
Generators—Turbine—
Moon Manufacturing Co.
Pyle-National Co.
Westinghouse Electric & Mfg. Co.
Glass Bottles (See Bottles, Glass)
Glassware—Chemical for Laboratory Use—
Illinois Glass Co.
Governors—
Equitable Meter & Mfg. Co.
Gardner Governor Co.
Governors—Boiler Feed—
Chaplin-Fulton Mfg. Co.
Fisher Governor Co.
Grey Iron Castings (See Castings)

H

Hammers—Chipping and Calking Pneumatic—
Chicago-Pneumatic Tool Co.
Hammers—Riveting Pneumatic—
Chicago Pneumatic Tool Co.
Hangers—Iron and Steel—
Continental Supply Co.
Dodge Mfg. Corp.
Hangers—Tubing—
Hercules Tool Co.
Hatches—Gauge and Thief—
Oil Conservation Engineering Co.
Heat Exchangers—
Carbondale Machine Co.
Griscom-Russell Co.
Hope Engineering & Supply Co.
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.
Heat Interchangers—Fluid—
Braun, C. F., & Co.
Ross Heater & Mfg. Co., Inc.
High Pressure Gate Valves (See Valves)—
Hoists—Pneumatic, Geared and Universal—
Yale & Towne Mfg. Co.
Hoists—Portable—
Ford Chain Block Co.
Sullivan Machinery Co.
Wright Mfg. Co.
Yale & Towne Mfg. Co.
Hooks for Rods and Tubing—
B. & A. Specialty Co.
Dunn Mfg. Co.
Hose—
Fenwick-Reddaway Mfg. Co.
Hose—Drillers—
Goodrich, B. F., Rubber Co.
United States Rubber Co.
Hose—Oil Suction and Discharge
Goodrich, B. F., Rubber Co.
United States Rubber Co.
Hose—Rubber—
Goodyear Tire & Rubber Co.
United States Rubber Co.
Hot Rolled Strip Steel (See Steel)
Hydraulic Gate Valves (See Valves)—
Hydraulic Jacks (See Jacks)—
Hypochlorite of Lime—
Mathieson Alkali Works, Inc.

I

Insulation Materials—
Celite Products Co.
Johns-Manville, Inc.
Insurance—Fire—
Oil Insurance Association.
Insurance—Tornado—
Oil Insurance Association.
Iron—Ingot—
American Rolling Mill Co.

J

Jacks—Hydraulic—
Bridgeport Machine Co.
Jacks—Lifting—
Templeton, Kenly & Co., Ltd.
Jacks—Pumping—
American Wells Works.
Bessemer Gas Engine Co.
Braden Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
Kansas City Hay Press Co.
Norris, W. C.
Spang & Co.
Jars—
Arbon, Paul, & Co.
Bridgeport Machine Co.
Spang & Co.
Jar Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

K

Kerosene—
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Skelly Oil Co.

L

Lacquers—
Arco Company, The
Sherwin-Williams Co.
Lanterns—Electric—
Delta Electic Co.
Lead and Mixed Metal Products—
Eagle-Picher Lead Co.
Lead in Oil—
Eagle-Picher Lead Co.
National Lead Co.
Lead Wool and Containers—
Eagle-Picher Lead Co.
Lifting Jacks (See Jacks)—
Lighting Equipment—
Pyle National Co.
Westinghouse Electric & Mfg. Co.
Liquid Level Controls (See controllers)—
Litharge—
Eagle-Picher Lead Co.
National Lead Co.
Loaders—Trucks—
Barber-Greene Co.
Long Distance Telephone—
American Telephone & Telegraph Co.
Lubricating Devices—
McCord Radiator & Mfg. Co.
Lubricating Oils (See Oils)—
Lubricators—
Ajax Iron Works.
Lunkenheimer Co.
Lubricators—Force Feed—
Manzel Brothers Co.
McCord Radiator & Mfg. Co.

M

Machine Tools—
Ryerson, Jos. T., & Sons, Inc.
Manholes—Tank—
Brooks Engineering Corp.
Manifolds—
Reid, Joseph, Gas Engine Co.
Meters—Gas—
Equitable Meter & Mfg. Co.
Foxboro Co., Inc.
Metric Metal Works.
Pittsburgh Meter Co.
Roots, P. H. & F. M., Co.
Westcott & Greis.
Meters—Gasoline—
Pittsburgh Meter Co.
Meters—Oil—
Pittsburgh Meter Co.
Molded Goods—Rubber—
Goodyear Tire & Rubber Co.
Motors—Electric—
Fairbanks-Morse & Co.
Westinghouse Electric & Mfg. Co.
Motors—Gasoline (See Engines—Gasoline)—
Motor Trucks (See Trucks—Motor)—

N

Naphtha—
Pure Oil Co.
Natural Gasoline (See Gasoline—Natural)—
Natural Gasoline Plant Equipment
American Tank Co.
Campbell, J. A.
Cooper, C. & G., Co.
Griscom-Russell Co.
National Gas Products Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.
Smith Separator Co.
Westcott & Greis.
Nitrogen—
Linde Air Products Co.
Nozzles—Spray—
Power Plant Equip. Co.

O

Oil and Gas Pipe Line Construction—
Hope Engineering & Supply Co.
Oil Burners (See Burners—Oil)—
Oil Engines, Semi-Diesel (See Engines—Semi-Diesel Oil)—
Oil Field Equipment—
Baker Casing Shoe Co.
Bridgeport Machine Co.
Cunningham Co.
Gaso Pump & Burner Mfg. Co.
International Derrick & Equipment Co.
Iron King Mfg. Co.
Kaw Boiler Works Co.
National Supply Co.
Oil Well Supply Co.
Parkersburg Machine Co.
Parkersburg Rig & Reel Co.
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Reid, Joseph, Gas Engine Co.
Republic Supply Co.
Simplex Equipment Co.
Trumble Gas Trap Co.
Oil Filters —(See Filters—Oil)—
Oil—Fuel—
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The
Oil—Gas—
Crown Central Petroleum Corp.
Gulf Refining Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The
Oil—Lubricating—
Barnsdall Refining Co.
Berry's James B., Sons Co.
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pennzoil Co.
Pure Oil Co.
Sinclair Refining Co.
Skelly Oil Co.
Texas Company, The
Oil—Tractor—
Barnsdall Refining Co.
Gulf Refining Co.
Pennzoil Co.
Pure Oil Co.
Skelly Oil Co.
Oiling Devices—
Lunkenheimer Co.
Oil Meters (See Meters)—
Oil Piping Equipment (See Fittings)—
Oil Reclaiming Process—
Barnickel, Wm. S., & Co.
Houston Pump & Supply Co.
Oil Refinery Equipment (See Refinery Equipment)—
Oil Securities (See Securities)—
Oil Suction and Discharge Hose—(See Hose)—
Oil Well Cementing—
Halliburton, Erle P.
Oil Well Screens (See Screens)—
Oil Wells Tools—
D & B Pump & Supply Co.
Hinderliter Tool Co.
Reed Roller Bit Co.
Titusville Forge Co.
U. S. Tool Co.
Over Shots—
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Oxygen—
Linde Air Products Co.

P

Packer Release—
Acme Fishing Tool Co.
Packers—
Goodyear Tire & Rubber Co.
Guiberson Corp.
Larkin & Co.
Layne & Bowler Co.
Oil Well Supply Co.
Regan Forge & Engineering Co.
Spang & Co.
United States Rubber Co.
Packing—
Crane Packing Co.
Durabla Mfg. Co.
Garlock Packing Co.
Goodrich, B. F., Rubber Co.
Imperial Belting Co.
Johns-Manville, Inc.
Packing—Metallic—
Crane Packing Co.
Paint Guns—
Binks Spray Equipment Co.
Painting Equipment—Mechanical
Matthews, W. N., Corp.
Paints—
Aluminum Co. of America.
American Asphalt Paint Co.
Arco Company, The
Cook Paint & Varnish Co.
Detroit Graphite Co.
Dixon, Joseph Crucible Co.
Eagle-Picher Lead Co.
Eclipse Paint & Mfg. Co.
Sherwin-Williams Co.
St. Louis Surfacer & Paint Co.
Pipe—Cast Iron—
American Cast Iron Pipe Co.
Greenspon's, Jos., Sons Iron & Steel Co.
International Supply Co.
U. S. Cast Iron Pipe & Fdy. Co.
Pipe—Lead Chemical and Antimonial—
Eagle-Picher Lead Co.
Pipe—Steel—
Continental Supply Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Murray Tool & Supply Co.
National Supply Co.
National Tube Co.
Republic Iron & Steel Co.
Ryerson, Jos. T., & Sons, Inc.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Superior Tube Co.
Pipe—Wrought Iron—
Byers, A. M., Co.
Frick-Reid Supply Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Oil Well Supply Co.
Reading Iron Co.
Superior Tube Co.
Pipe and Nipple Threading Machines—
Bignall & Keeler Machine Works.
Cox & Sons Co., The
Landis Machine Co.
Ryerson, Jos. T., & Sons, Inc.
Standard Engineering Co.
Pipe Clamps (See Clamps—Pipe)
Pipe Fittings (See Fittings)—
Pipe Grips—
Larkin & Co.
Pipe Headers—
National Tube Co.
Newton Process Mfg. Co.
Pipe Line Construction Tools—
National Transit Pump & Machine Co.
Pipe Line Ditchers (See Ditchers)
Pipe Line Equipment—
Gaso Pump & Burner Mfg. Co.
Pipe Screwing Machines—
Buckeye Traction Ditcher Co.
Pipe Suspension Device—
Stearns-Roger Mfg. Co.
Pipe Threaders—Power—
Williams Tool Corp.
Pipe Tools—
Armstrong Brothers Tool Co.
Nye Tool & Machine Works.
Piping—Fabricated—
Kelly & Jones Co.
Midwest Piping & Supply Co.
Piping—Hard Rubber—
United States Rubber Co.
Piping—Steel & Iron—
Crane Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Power Piping Co.
Pistons—
Guiberson Corp.
Heppenstall Forge & Knife Co.
Pistons—Expansion—
Wilson Oil Tool Corp.
Pistons—Slush Pump—
Guiberson Corp.
Plugs—Bottom Water—
Guiberson Corp.
Portable Drilling Rigs (See Rigs)
Power Pumps (See Pumps)—
Power Units—Portable (See Engines)—
Pre-Heaters—
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Preservatives—Asphalt—
American Asphalt Paint Co.
Pulleys—Wood, Iron and Steel—
Continental Supply Co.
Dodge Mfg. Co.
Pulling Machines—
Iron King Mfg. Co.
National Supply Co.
Safety Pulling Machine Co.
Pumpers—Long Stroke—
Farley Machine Co.
Pumping and Pulling Motors—Electric—
Westinghouse Electric & Mfg. Co.
Pumping Equipment—
American Well Works.
Axelson Machine Co.
Bryson Jackson Pump Mfg. Co., Inc.
D & B Pump & Supply Co.
Farley Machine Co.
Goulds Pumps, Inc.
Jones, S. M., Co.
Myers, F. E., Bros. & Co.
Northrup Equipment Co.
Oil Well Supply Co.
Prescott Co.
Ratigan, J. P., Co.
Waukesha Motor Co.
Pumping Gear Units—
Nuttall, R. D., & Co.
Pumping Jacks (See Jacks)—
Pumping Powers—
Aldrich Pump Co.
Bessemer Gas Engine Co.
Buda Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
Kansas City Hay Press Co.
Marion Mch., Fdy. & Supply Co.
National Supply Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Spence Machine Co.
Titusville Iron Works Co.
Pumps—Boiler Feed—
Ajax Iron Works.
Byron Jackson Pump Mfg. Co., Inc.
Fairbanks-Morse & Co.
Gardner Governor Co.
Oil Well Supply Co.
Pumps—Centrifugal—
American Well Works.
Byron Jackson Pump Mfg. Co., Inc.
Dean Hill Pump Co.
Fairbanks-Morse & Co.
Worthington Pump & Machinery Corp.
Pumps—Direct Driven—
Aldrich Pump Co.
Bessemer Gas Engine Co.
Pumps—Electric—
Prescott Co.
Pumps—Fuel Oil Service—
Aldrich Pump Co.
Blackmer Pump Co.
Northern Fire Apparatus Co.
Pumps—Fuel Oil Transfer—
Aldrich Pump Co.
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Pumps—Gasoline and Oil for Filling Stations—
Gilbert & Barker Mfg. Co.
Pumps—Gear Driven—
Aldrich Pump Co.
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
Prescott Co.
Pumps—Hot Oil—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Pumps—Pipe Line—
Aldrich Pump Co.

Byron Jackson Pump Mfg. Co., Inc.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
National Transit Pump & Machine.
Prescott Co.
Worthington Pump & Machinery Corp.

Pumps—Power—
Aldrich Pump Co.
Dean Brothers Co.
Fairbanks-Morse & Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Myers, F. E., Bro. & Co.
National Transit Pump & Machine Co.
Novo Engine Co.
Prescott Co.
Waukesha Motor Co.

Pumps—Refinery—
Aldrich Pump Co.
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Dean Hill Pump Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Kinney Mfg. Co.
National Transit Pump & Machine Co.
Northern Fire Apparatus Co.

Pumps—Rotary—
Blackmer Pump Co.
Northern Fire Apparatus Co.
Roots, P. H. & F. M., Co.

Pumps—Sand—
Bridgeport Machine Co.
Larkin & Co.

Pumps—Slush—
Gardner Governor Co.

Pumps—Steam—
Dean Brothers Co.
Fairbanks-Morse Co.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Prescott Co.

Pumps—Suction—
Gaso Pump & Burner Mfg. Co.

Pumps—Vacuum—
Bessemer Gas Engine Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Gaso Pump & Burner Mfg. Co.
Miller Improved Gas Engine Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.

Pumps—Water—
Aldrich Pump Co.
American Well Works.
Byron Jackson Pump Mfg. Co., Inc.
Gaso Pump & Burner Mfg. Co.
Northern Fire Apparatus Co.
Prescott Co.

Purifiers—Oil Absorption—
Sharpless Specialty Co.

Pyrometers—
Brown Instrument Co.
Republic Flow Meters Co.

R

Ratchet Pipe Cutters—
Toledo Pipe Threading Machine Co.

Ratchet Pipe Threaders—
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.

Ratchet Reamers—
Nye Tool & Machine Works.

Ratchet Stocks and Dies—
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.

Receiving Boxes—
Reid, Joseph, Gas Engine Co.

Recorders—Differential Pressure—
Equitable Meter & Mfg. Co.
Metric Metal Works.

Refinery Equipment—
American Radiator Co.
Braun, C. F., & Co.
Carbondale Machine Co.
Chicago Bridge & Iron Works.
Graver Corp.
Griscom-Russell Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Appliance Co.
Petroleum Iron Works Co.
Power Piping Co.
Power Specialty Co.
Reid, Joseph, Gas Engine Co.
Ross Heater & Mfg. Co., Inc.
Ross-Meehan Foundries.
Smith, A. O., Corp.
Smith Separator Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.
United Iron Works, Inc.
Universal Oil Products Co.
Vogt, Henry, Machine Co.
Walsh & Weidner Boiler Co.
Westcott & Greis.
Widdell Engineering Co.

Refractories—Furnace, Stills and Baffles—
Botfield Refractories Co
National Gas Products Co.

Refrigerating Machinery—
Carbondale Machine Co.
United Iron Works, Inc.
Vogt, Henry, Machine Co.

Regulators—
Fisher Governor Co Inc
Gilfillan Machine Works
Smith Separator Co.

Regulators—Gas—
Chaplin-Fulton Mfg. Co.
Davis, G. M., Regulator Co.
Equitable Meter & Mfg. Co.
Fisher Governor Co.
Metric Metal Works.
National Gas Products Co.
Smith Separator Co.

Rental Service—
Bridgeport Machine Co.

Reversible Clutches—
Bessemer Gas Engine Co.

Rig Irons—
International Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.

Rigs—Drilling, All Steel—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.

Rigs—Portable Drilling—
National Supply Co.
National Turnbuckle Derrick Co.
Star Drilling Machine Co.

River Clamps (See Clamps)—

Rods—Polish—
Jones, S. M., Co.

Rods—Pull—
Axelson Machine Co.
Columbus Sucker Rod Co.
Jones, S. M., Co.
Sheffield Steel Corp.

Rods—Sucker—
Axelson Machine Co.
Columbus Sucker Rod Co.
D & B Pump & Supply Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Sheffield Steel Corp.

Rods—Valve—
Jones, S. M., Co.

Roofing—Asbestos—
Johns-Mansville, Inc.

Rope Socket Metal—
Eagle-Picher Lead Co.

Rope—Manila—
Ajax Rope Co., Inc.
Bovaird Supply Co.
Republic Supply Co.

Rope—Wire—
Ajax Rope Co., Inc.
American Cable Co.
Bovaird Supply Co.
Bridgeport Machine Co.
Broderick & Bascom Rope Co.
International Supply Co.
Jarecki Mfg. Co.
Leschen, A. & Sons, Rope Co.
Wickwire-Spencer Steel Corp.

Rotary Bit Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Rotary Drilling Equipment—
Emsco Derrick & Equipment Co.
Frick-Reid Supply Co.
International Derrick & Equipment Co.
Link-Belt Co.
Lucey Mfg. Corp.
Lufkin Foundry & Machine Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Titusville Iron Works Co.

Rotary Lines (See Rope—Wire)—

Rotary Post—
Reed Roller Bit Co.

Rotary Tool Joints—
Bartlesville Supply Co.
Hughes Tool Co.

Rubber Belting (See Belting)—

Rubber Hose (See Hose)—

Run Down Tanks (See Tanks)—

Rust Preventatives—
Dearborn Chemical Co.
Eagle-Picher Lead Co.

S

Sand Lines—Manila —
Ajax Rope Co., Inc.
Plymouth Cordage Co

Sand Lines—Wire—
Ajax Rope Co., Inc.
Broderick & Bascom Rope Co.
Wickwire-Spencer Steel Corp.

Screens—Oil Well—
Layne & Bowler Co.

Screens—Water Well—
Layne & Bowler Co.

Screws Temper—
Burns Tool Co.

Seamless Steel Couplings—(See Couplings Seamless Steel)—

Separators—Centrifugal—
Miller, Max B., & Co.
Sharpless Specialty Co.
Volz Engineering Equipment Co.

Separators—Gas and Oil—
American Tank Co.
Smith Separator Co.

Sheet Lead—Chemical and Antimonial—
Eagle-Picher Lead Co.

Sheets—Corrugated, Black and Galvanized—
American Sheet & Tin Plate Co.
Ryerson, Jos., T., & Son, Inc.
United Alloy Steel Corp.

Sheets—Steel—
American Sheet & Tin Plate Co.
Republic Iron & Steel Co.
Sheffield Steel Corp.
United Alloy Steel Corp.

Shingles—Asbestos—
Johns-Manville, Inc.

Sleeves—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Sleeves—Split—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Slush Pump Pistons (See Pistons)—

Slush Pumps—(See Pumps)—

Smoke Stacks—
Donovan Boiler Works.

Snuffers—Fire—
Simplex Equipment Co.

Sockets—
Acme Fishing Tool Co.
Bridgeport Machine Co.
Spang & Co.

Sockets—Swivel—
Arbon, Paul, & Co.

Sockets—Wire Rope—
Chicago Steel Foundry Co.

Soda Ash—
Mathieson Alkali Works, Inc.

Soda—Caustic—
Mathieson Alkali Works, Inc.

Solders—Bar and Wire—
Eagle-Picher Lead Co.
Hoyt Metal Co.

Spark Plugs—
Moser Metal Products Corp.

Spears—
Acme Fishing Tool Co.
Brown Tool Co., Inc.

Special Steel (See Steel Special)—

Split Sleeves (See Sleeves)—

Sprockets—Power Transmission—
Ajax Iron Works.
Chain Belt Co.

Stands—Vise—
Nye Tool & Machine Works.

Stationary Pipe Threading Die Heads (See Die Heads)—

Steel—All Kinds—
Ryerson, Jos., T., & Son, Inc.

Steel—Alloy—
Central Steel Co.
Timken Roller Bearing Co.
United Alloy Steel Corp.

Steel—Bit—
Central Steel Co.

Steel—Hot Rolled Strip—
Central Steel Co.

Steel—Special—
Andrews Steel Co.
Central Steel Co.
United Alloy Steel Corp.

Steel Band Wheels (See Band Wheels—Steel)—

Steel Bridges—(See Bridges)—

Steel Bull Wheels (See Bull Wheels—Steel)—

Steel Castings (See Castings)—

Steel Couplings for Casing, Line Pipe, Drill Pipe and Tubing (See Couplings)—

Steel Crown Blocks (See Crown Blocks)—

Steel Derricks (See Derricks)—

Steel Fabricators—Structural—
Austin Co.
Braden Co.
Graver Corp.
International Derrick & Equipment Co.

Steel Fittings (See Fittings)—

Steel Pitmans—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.

Steel Plate Construction—
Chicago Bridge & Iron Works
Graver Corp.
Kaw Boiler Works Co.
Petroleum Iron Works Co.
Vogt, Henry, Machine Co.

Steel Sheets (See Sheets, Steel)—

Steel Valves (See Valves—Steel)—

Steel Walking Beams (See Walking Beams—Steel)—

Steel Wheels and Tug Rims—
International Derrick & Equipment Co.

Stills—
Chicago Bridge & Iron Works.
Graver Corp.
Kaw Boiler Works Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Iron Works Co.
Smith, A. O., Corp.
Vogt, Henry, Machine Co.
Widdell Engineering Co.

Stocks & Dies—
Borden Co.
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.

Structural Steel Fabricators (See Steel Fabricators)—

Stuffing Boxes—
Axelson Machine Co.
Kansas City Hay Press Co.

Sucker Rods (See Rods—Sucker)

Suction Pumps (See Pumps)—

Sulphuric Acid—
Eagle-Picher Lead Co.

Superheaters—Steam—
Power Plant Equip. Co.

Swabs—
Arbon, Paul, & Co.
Guiberson Corp.
Hoffman Mfg. Co.
Saunders Bros.
Simplex Equipment Co.

Swedge Nipples—
Dresser, S. R., Mfg. Co.
Harrisburg Pipe & Pipe Bending Co.

Swing Line Equipment—
Brooks Engineering Corp.

Swivels—
Layne & Bowler Co.
Lucey Mfg. Corp.
Titusville Iron Works Co.

T

Tank Cars (See Cars—Tank)—

Tank Cars Leased (See Cars)—

Tank Equipment—
Brooks Engineering Corp.
Oil Conservation Engineering Co.

Tanks—Bolted—
American Tank Co.
Butler Mfg. Co.
Maloney Tank Mfg. Co.
Parkersburg Rig & Reel Co.

Tanks—Bulk Station—
Butler Mfg. Co.
Graver Corp.

Tanks—Cylindrical—
Petroleum Iron Works Co.

Tanks—Elevated Steel—
Chicago Bridge & Iron Works.

Tanks—Field Storage—
American Car & Foundry Co.
American Tank Co.
Donovan Boiler Works.
Graver Corp.
Kaw Boiler Works.
Kewanee Boiler Co.
Maloney Tank Mfg. Co.
Petroleum Iron Works Co.
Pittsburgh-Des Moines Steel Co.
Riter-Conley Co.
United Iron Works, Inc.

Tanks—Horizontal Storage—
Graver Corp.
Kaw Boiler Works Co.
Maloney Tank Mfg. Co.

Tanks—Run Down—
Donovan Boiler Works.
Graver Corp.
Kaw Boiler Works Co.
Newton Process Mfg. Co.

Tanks—Truck—
American Tank Co.
Butler Mfg. Co.
White Co.

Tanks—Underground—
Butler Mfg. Co.
Gilbert & Barker Mfg. Co.
Graver Corp.
Kewanee Boiler Co.
Pittsburgh-Des Moines Steel Co.

Tanks—Welded—
American Tank Co.
Chicago Bridge & Iron Works.

Taper Taps—
Hughes Tool Co.

Tapes—Measuring for Oil Gauging—
Lufkin Rule Co.

Temperature Controllers (See Controllers—Temperature)—

Temper Screws (See Screws)—

Thermometers—Indicating and Recording—
American Schaeffer & Budenberg Corp.
Bristol Co.
Taylor Instrument Co.

Threading Machines—
Bignall & Keeler Machine Wks.
Cox & Sons Co., The
Landis Machine Co.

Thread Protectors—
Spang & Co.

Tires—Automobile—
Continental Supply Co.

Tongs—
Bridgeport Machine Co.
Wilson Oil Tools Corp.

Tongs—Back Up—
Williams, J. H., & Co.

Tongs—Break Out—
Reed Roller Bit Co.
Williams, J. H., & Co.

Tongs—Casing—
Dunn Mfg. Co.
Guiberson Corp.

Tongs—Chain Pipe—
Armstrong Bros. Tool Co.
Williams, J. H., & Co.

Tongs—Pipe—
National Transit Pump & Machine Co.

Tongs—Rotary—
Dunn Mfg. Co.

Tongs—Tool Joint—
Guiberson Corp.
Hughes Tool Co.
Reed Roller Bit Co.

Tongs—Tubing—
Dunn Mfg. Co.

Tool Chests—Pipe—
Nye Tool & Machine Works.

Tool Joints—
Bridgeport Machine Co.
Federal Supply Co.
Hughes Tool Co.
Lucey Mfg. Corp.
Oil Well Supply Co.
Regan Forge & Engineering Co.

Tool Joint Tongs (See Tongs)

Tools—Fishing and Drilling (See Drilling and Fishing Tools)—

Torches—
Oxweld Acetylene Co.

Tractor Oil (See Oil—Tractor)—

Tractors—
Cleveland Tractor Co.
International Harvestor Co. of America.
Rock Island Plow Co.

Transmission Belt—Rubber—
Goodrich, B. F. Rubber Co.
United States Rubber Co.

Transmission Lining—
Stanley Belting Corp.

Traveling Block—
Lucey Mfg. Corp.
Regan Forge & Engineering Co.
Wright Mfg. Co.

Trenchers—Vertical Boom—
Barber-Greene Co.

Trucks—Motor—
Ford Motor Co.
General Motors Truck Co.
International Harvester Co. of of America.
White Co.

Truck Tanks (See Tanks)—

Truck Tires (See Tires—Truck)—

Tubes—Boiler, Charcoal Iron—
Byers, A. M., Co.
Reading Iron Co.

Tubes—Boiler Steel—
Continental Supply Co.
National Tube Co.
Ryerson, Jos. T., & Son, Inc.

Tubing—
Babcock & Wilcox Tube Co.
Byers, A. M., Co.
Central Tube Co.
Continental Supply Co.
National Tube Co.
Reading Iron Co.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Superior Tube Co.

Tubing Catchers—
Continental Supply Co.
Dunn Mfg. Co.
Guiberson Corp.

Tubular Elevators (See Eelevators, Casing and Tubing)—

Tubular Goods—
Continental Supply Co.
Oil Well Supply Co.
Republic Iron & Steel Co.
Spang, Chalfant & Co., Inc.

Tubular Goods—Wrought Iron—
Byers, A. M., Co.
Reading Iron Co.

Turbines for Lighting Equipment
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.

Turbine Generators (See Generators—Turbine)—

Turnbuckle Derricks (See Derricks)—

U

Underground Tanks (See Tanks)

Underreamer Body Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Underreamers—
Bridgeport Machine Co.
Brown Tool Co., Inc.
Guiberson Corp.
Wilson Oil Tools Corp.

Unions—
Jefferson Union Co.
Kelly & Jones Co.

V

Vacuum Pumps (See Pumps)—

Valuations—
American Appraisal Co.

Valves—Blow-off—
Homestead Valve Mfg. Co.

Valves—Brass and Bronze—
Homestead Valve Mfg. Co.
Kelly & Jones Co.
Lunkenheimer Co.
Reading Steel Casting Co.
Walworth Mfg. Co.

Valves—Cast Steel—
Chapman Valve Mfg. Co.
Homestead Valve Mfg. Co.

Valves—Check—
Gaso Pump & Burner Mfg. Co.
Lunkenheimer Co.

Valves—Drop Forged Steel—
Edward Valve & Mfg. Co.
Vogt, Henry, Machine Co.

Valves—Gate—High and Low Pressure—
Chapman Valve Mfg. Co.
Crane Co.
Darling Valve & Mfg. Co.
Kelly & Jones Co.
Kennedy Valve Mfg. Co.
Kerotest Mfg. Co.
Ludlow Valve Mfg. Co.
Lunkenheimer Co.
Murray Tool & Supply Co.
Powell, Wm., Co.

Valves—Iron—
Chapman Valve Mfg. Co.
Lunkenheimer Co.
Reading Steel Casting Co.

Valves—Metal Pump—
Durabla Mfg. Co.

Valves—Pump—
United States Rubber Co.

Valves—Relief—Supersensitive—
Davis Regulator Co.

Valves—Steel—
Chapman Valve Mfg. Co.
Edward Valve Mfg. Co.
Kelly & Jones Co.
Kerotest Mfg. Co.
Lunkenheimer Co.
Metric Metal Works.
Powell, Wm., Co.
Reading Steel Casting Co.

Valves—Tank Vent—
Brooks Engineering Corp.
Oil Conservation Engineering Co.

Valves—Working Barrel—
Atlas Ball Co.
Axelson Machine Co.
D & P Pump & Supply Co.
Hough, Charles N., Mfg. Co.
Northup Equipment Co.
Oil Well Supply Co.

Varnishes—
Arco Company, The.
Sherwin-Williams Co.

Ventilators—Rotary—
Swartwout Co.

Vises—Bench—
Nye Tool & Machine Works.

Vises—Pipe—
Nye Tool & Machine Works.

Vises—Post—
Nye Tool & Machine Works.

W

Wagons—Truss Wheel—
Athey Truss Wheel Co.

Walking Beams—Steel—
Emsco Derrick & Equip. Co.
Moore, Lee C., & Co., Inc.

Water Cooling Systems—
Power Plant Equip. Co.

Water Gauge Cocks (See Cocks)—

Water Pumps (See Pumps)—

Water Softeners and Filters—
Butler Mfg. Co.
Graver Corp.

Water Well Screens (See Screens)

Wax—
Barnsdall Refining Co.
Gulf Refining Co.
Pure Oil Co.

Weight Indicators—
Hughes Tool Co.

Welded Tanks (See Tanks)—

Welding Accessories—Electric—
Wilson Welder & Metals Co.

Welding and Cutting Apparatus—
Oxweld Acetylene Co.

Welding Machines—Electric—
Wilson Welder & Metals Co.

Welding Supplies—
Oxweld Acetylene Co.

Welding Wire—
Frick-Reid Supply Co.
Oxweld Acetylene Co.
Wilson Welder & Metals Co.

Well Drilling and Fishing Tools—(See Drilling and Fishing Tools)—

Well Drilling Equipment (See Drilling Equipment)—

Well Shooting—
Eastern Torpedo Co.
Zero Hour Torpedo Co.

Wheels—Pipe Cutter—
Nye Tool & Machine Works.

Wheel—Steel Automotive—
Budd Wheel Co.

Winches—
Braden Co.
Brooks Engineering Co.
Oil Conservation Engineering Co.

Wire Lines (See Cables—Steel)—

Wire Rope (See Rope—Wire—

Wood Patterns and Models—
Gaso Pump & Burner Mfg. Co.

Working Barrels—
Axelson Machine Co.
D & B Pump & Supply Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hough, Charles N., Mfg. Co.
McGregor Working Barrel Co.
Norris, W. C.
Northrup Equipment Co.
Oil Well Supply Co.

Working Barrel Valves (See Valves—Working Barrel)—

Wrenches—Closet Spuds—
Nye Tool & Machine Works.

Wrenches—Drop Forged—
Williams, J. H., & Co.

Wrenches—Pipe—
Trimont Mfg. Co.
Walworth Mfg. Co.

Wrenches—Ratchet—
Dresser, S. R., Mfg. Co.
Nye Tool & Machine Works.

Z

Zinc Oxide—
Eagle-Picher Lead Co.

Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Statement for February Runs

*Prairie Pipe Line Co.	3,360,000	120,000
Gulf Pipe Line Co.	863,753	30,848
Texas Pipe Line Co.	478,324	17,083
Magnolia Pet. Co.	1,036,521	36,983
Cosden Pipe Line Co.	810,019	28,928
Empire Pipe Line Co.	644,510	23,018
*Sinclair ipe Line Co.	1,417,220	50,615
*Other lines	6,636,000	237,000
Total February	15,245,347	544,475
Total January	16,910,854	545,507
Difference	1,665,507	1,032

Shipments

†Prairie Pipe Line Co.	4,071,405	145,407
Gulf Pipe Line Co.	1,015,592	36,271
Texas Pipe Line Co.	606,744	13,098
Magnolia Pet. Co.	1,350,252	48,223
Cosden Pipe Line Co.	636,563	22,948
Empire Pipe Line Co.	720,206	25,722
†Sinclair Pipe Line Co.	2,102,156	75,077
*Other lines	7,140,000	255,000
Total February	17,542,918	626,532
Total January	19,168,415	618,333
Difference	1,625,497	8,199

Stocks

*Prairie Oil & Gas Co.	27,580,000
Prairie Pipe Line Co.	2,000,000
Gulf Pipe Line and Gypsy Oil Co.	6,453,161
The Texas Company	4,323,345
Magnolia Petroleum Co.	5,455,717
Cosden Pipe Line Co.	1,771,451
Empire Pipe Line Co.	2,890,445
Sinclair Crude Oil Purchasing Co.	21,550,000
Carter Oil Co.	16,018,257
*Other lines	9,900,000
Total February	96,942,376
Total January	98,258,772
Difference	1,316,396

*Estimated.

†Prairie shipments also include Texas crude oil and Sinclair shipments include also Wyoming and Texas crude oil.

Note—Stocks do not include approximately 5,900,000 bbls. held in storage on private tank farms and leases.

EASTERN PIPE LINES

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for January and February:

	Jan. '26	Feb. '26
Nat. Transit	143,083.02	140,437.20
S. W. Pa. P. L.	77,636.84	82,218.00
Eureka P. L.	328,099.81	328,709.96
Buckeye P. L. (Macksburg)	279,450.58	275,240.87
Buckeye P. L. (Cleveland)	11,364.93	10,297.41
Buckeye P. L. (Lima, etc.)	117,302.17	117,052.32
Indiana P. L.	8,872.25	9,530.57
Cumberland P. L.	264,029.33	257,256.68
N. Y. Transit	18,738.53	17,815.08
Tidewater P. L.	145,119.51	136,839.08
Pure Oil	168,182.43	168,793.43
Emery P. L.	48,775.97	43,385.55
Indian Ref.	80,966.82	80,656.88
Paragon Dev.	26,760.22	25,650.67
Pittsburgh P. L.	6,141.78	6,649.29
Total	1,724,524.19	1,691,032.98
Daily average	55,629.81	60,394.03

Note—Indian Refining Co. also reported other receipts of 280,008.91 bbls. Paragon Refining Co. had other receipts of 136,185.12 bbls. Paragon Development had other receipts of 1,750.32 bbls. Pure Oil had other receipts of 58,277.57 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pensylvania, West Virginia, Ohio, Kentucky and Indiana for January and February:

	Jan. '26	Feb. '26
Nat. Transit	288,806.28	300,294.95
S. W. Pa. P. L.	366,562.67	320,351.13
Eureka P. L.	164,947.50	148,099.79
Buckeye P. L. (Macksburg)	117,122.01	122,324.18
Buckeye P. L. (Cleveland)	1,133.83	969.77
Buckeye P. L. (Lima, etc.)	786,501.04	705,531.60
Indiana P. L.	1,163,995.13	1,099,401.49
Cumberland P. L.	162,188.71	150,113.41
N. Y. Transit	708,005.50	626,231.48
Northern P. L.	135,305.06	122,498.92
Tidewater P. L.	107,972.03	143,555.36
Pure Oil	224,858.49	211,673.48
Emery P. L.	41,988.55	44,896.24
Paragon Ref.	161,272.07	118,033.56
Indian Ref.	428,138.88	431,529.21
Paragon Dev.	31,314.40	23,864.81
Pittsburgh P. L.	7,640.10	6,292.15
Total	4,837,741.34	4,465,661.53
Daily average	156,056.20	159,487.91

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of January and February, were as follows:

	Jan. '26	Feb. '26
Nat. Transit	1,010,063.01	1,010,063.21
S. W. Pa. P. L.	705,514.46	668,593.49
Eureka P. L.	1,503,389.89	1,514,235.47
Buckeye P. L. (Macksburg)	335,515.41	372,524.75
Buckeye P. L. (Cleveland)	72,522.50	66,885.32
Buckeye P. L. (Lima, etc.)	2,773,898.18	2,402,586.47
Indiana P. L.	536,488.64	550,608.52
Cumberland P. L.	607,313.30	583,281.41
Southern P. L.	497,782.56	532,095.25
N. Y. Transit	659,952.29	721,540.07
Northern P. L.	449,408.69	481,120.13
Pure Oil	400,945.59	405,108.77
Emery P. L.	30,751.96	29,360.37
Paragon Ref.	48,043.84	71,433.17
Indian Ref.	218,689.98	159,991.34
Paragon Rev.	4,800.92	5,465.24
Pittsburgh P. L.	4,084.15	4,502.80
Total	9,859,170.36	9,579,394.88
Increase	599,275.00	279,775.48

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of January and February showing the gross stocks of the above fields:

	Jan. '26	Feb. '26
Penna.	3,862,226.25	3,895,733.10
Lima	1,025,702.95	1,022,956.97
Kentucky	1,197,665.71	1,181,936.95
Mid-Continent	3,717,998.58	3,396,996.28
Illinois	55,576.87	81,771.58
Total	9,859,170.36	9,579,394.88

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1923	1924	1925	1926
January	75,790	63,638	56,831	55,630
February	71,092	68,023	60,606	60,394
March	76,592	68,721	60,575	.....
April	75,614	71,058	63,062	.....
May	77,365	63,942	59,217	.....
June	77,593	63,230	61,270	.....
July	71,879	64,208	62,639	.....
August	76,910	59,942	59,686	.....
September	72,358	60,930	62,510	.....
October	76,256	64,976	60,995	.....
November	70,762	56,282	59,350	.....
December	69,271	55,814	57,974	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1923	1924	1925	1926
January	171,067	145,518	157,889	156,056
February	164,219	148,732	160,863	159,488
March	185,487	147,098	154,591	.....
April	170,751	147,611	151,429	.....
May	177,102	134,997	146,995	.....
June	173,598	143,010	149,467	.....
July	168,330	124,187	161,338	.....
August	142,776	123,120	161,730	.....
September	137,266	127,325	156,719	.....
October	134,597	123,170	145,388	.....
November	131,426	124,400	143,582	.....
December	139,909	151,392	150,162	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1924	1925	1926
January	12,907,202	11,353,276	9,859,170
February	11,844,068	11,192,924	9,579,394
March	10,906,752	11,158,297	.....
April	10,922,742	11,062,082	.....
May	11,335,309	11,207,562	.....
June	11,544,204	11,093,796	.....
July	12,062,361	11,067,453	.....
August	12,221,676	10,974,481	.....
September	12,206,836	10,781,753	.....
October	12,664,061	11,086,850	.....
November	12,268,530	11,068,158	.....
December	11,583,680	10,458,445	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

1925—	Receipts	Shipmts.	Stocks
February	2,702.05	4,564.70	11,075.81
March	3,177.21	2,354.30	11,898.74
April	3,040.41	1,780.11	13,159.04
May	2,814.99	5,719.90	10,254.13
June	3,052.75	1,221.83	12,085.05
July	2,639.34	3,174.10	11,550.29
August	3,216.97	1,577.99	13,189.27
September	2,929.99	5,352.05	10,767.21
October	2,869.75	1,499.34	12,137.61
November	2,759.66	2,571.32	12,283.49
December	2,661.87	3,441.67	11,503.69
1926—			
January	2,990.16	1,478.35	13,015.41
February	2,580.23	2,776.19	12,819.45

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks March 1	2,525,834.95
Runs from wells	605,763.55
Other receipts	497,543.71
Regular deliveries	465,591.43
Other deliveries	461,229.17

The amount of Illinois oil run by the Tidewater Pipe Co. in February was 26,848.44 bbls. and deliveries were 40,719.09 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1925—		
March	754,335.68	611,348.49
April	623,866.14	637,242.85
May	692,671.94	668,573.63
June	700,090.46	689,535.34
July	724,481.26	664,713.19
August	673,652.38	650,649.97
September	706,434.87	510,697.61
October	706,532.00	633,682.32
November	664,556.30	488,443.19
December	665,086.99	578,938.47
1926—		
January	666,243.62	516,083.76
February	632,611.99	506,310.51

The Tidewater Pipe Co., Ltd., also delivered in February 115,542.91 bbls. of Oklahoma oil. The total deliveries of all grades by the Tidewater were 299,817.36 bbls.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
November	7,032	9,419	14,258	12,903	9,161	52,773	.....	.....	5,032	306	5,338	58,611
December	6,226	12,139	28,452	20,193	9,677	76,677	.....	4,639	4,371	.....	9,710	86,387
January	9,355	13,484	32,581	19,387	5,097	79,804	.....	.....	.....	65	65	79,869
February	13,111	9,464	28,214	24,393	20,107	95,289	.....	.....	.....	.....	.....	95,289

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
November	18,935	4,193	45,774	9,808	33,419	113,127	12,613	26,484	7,516	6,000	52,613	164,740
December	13,806	20,648	35,613	15,064	30,613	114,644	13,129	25,327	6,935	5,516	50,907	165,611
January	12,451	19,484	49,451	12,645	21,903	116,934	21,903	25,871	5,645	4,871	58,290	174,224
February	14,643	16,071	60,107	9,464	20,750	121,035	22,321	20,250	6,286	6,714	85,571	206,606

GROSS PRODUCTION OF THE UNITED STATES FOR 12 MONTHS

(IN BARRELS)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	Total
March:	Month	18,626,019	14,403,716	13,062,907	2,824,534	3,564,472	1,807,559	2,754,235	3,202,000	60,225,443
	Daily average	600,839	464,636	421,384	91,114	114,983	58,308	88,901	103,290	1,942,756
April:	Month	17,959,052	14,055,450	12,695,365	2,971,110	7,560,230	1,767,077	2,744,691	3,084,000	62,837,576
	Daily average	598,655	468,515	423,179	99,037	252,008	58,903	91,490	102,800	2,094,586
May:	Month	18,820,328	14,443,675	13,077,697	3,493,266	11,813,996	1,886,752	2,799,542	3,167,300	69,502,556
	Daily average	607,107	465,925	421,861	112,686	381,097	60,863	90,308	102,171	2,242,018
June:	Month	19,288,135	13,832,970	13,602,540	3,229,440	9,200,372	1,830,965	2,754,498	3,389,000	66,127,920
	Daily average	642,938	461,099	420,085	107,648	306,672	61,032	91,816	109,000	2,204,264
July:	Month	20,411,049	14,263,565	12,337,598	3,686,675	7,835,819	1,898,178	3,128,199	3,348,000	66,910,083
	Daily average	658,421	460,115	397,984	118,925	252,768	61,231	100,942	108,000	2,158,390
August:	Month	21,005,580	14,441,040	11,936,079	3,558,087	7,450,580	1,858,543	3,250,445	3,177,000	66,677,357
	Daily average	677,599	465,480	385,032	114,777	240,341	59,727	104,853	102,484	2,150,883
September:	Month	20,062,763	14,825,040	11,264,890	3,393,270	6,457,950	1,776,570	3,235,625	3,213,000	64,228,108
	Daily average	668,759	494,168	375,496	113,109	215,265	59,219	107,854	107,067	2,140,937
October:	Month	20,015,076	14,921,199	11,196,511	3,477,146	6,409,281	1,871,830	3,394,990	3,248,000	64,534,033
	Daily average	645,648	481,329	361,178	112,166	206,751	60,382	109,500	104,774	2,081,743
November:	Month	19,095,907	14,590,980	10,650,087	3,221,760	5,927,955	1,758,882	3,088,121	2,992,000	61,325,692
	Daily average	636,530	486,366	355,003	107,397	197,599	58,629	102,937	99,753	2,044,190
December:	Month	19,249,711	14,123,848	10,930,455	3,308,816	6,047,883	1,763,966	3,187,164	3,086,900	61,698,742
	Daily average	620,959	455,608	352,595	106,736	195,093	56,902	102,812	99,552	1,990,282
January:	Month	19,069,563	13,674,813	10,880,814	3,250,536	5,489,620	1,606,952	3,136,280	3,014,000	60,122,578
	Daily average	615,147	441,123	350,994	104,856	177,084	51,835	104,396	97,226	1,939,438
February:	Month	17,163,963	12,387,630	9,689,120	2,877,812	4,756,836	1,583,904	2,769,605	2,719,100	53,947,960
	Daily average	612,999	442,415	346,040	102,779	169,887	56,568	98,914	97,111	1,926,713
	Total 12 months	230,767,747	169,963,916	140,324,062	39,292,452	83,514,995	21,411,178	36,224,398	37,639,300	758,128,049
	Daily average	632,240	465,655	384,449	107,651	226,068	58,661	99,245	103,121	2,077,091

The ADVERTISERS' INDEX

A

Acme Fishing Tool Co.
Air Cleaning & Reaming Corp.
Ajax Iron Works 104-105
Ajax Rope Co.
Aluminum Co. of America
American Appraisal Co. 163
American Asphalt Paint Co. 122
American Cable Co.
American Car & Foundry Co.
American Mfg. Co. of Texas
American Radiator Co.
American Roller Bearing Co. 178
American Rolling Mill Co.
American Schaeffer & Budenburg Corp.
American Sheet & Tin Plate Co.
American Spiral Pipe Works 184
American Tank Co.
American Telephone & Telegraph Co.
American Well Works
Anderson & Anderson 188
Anderson, Carl B. 186
Andrews Steel Co. 176
Arbon, Paul & Co.
Arco, Company, The 85
Arkansas Service Co., Inc. 187
Armstrong Bros. Tool Co. 185
Arnold, J. F., & Co.
Askania, Werke, A. G.
Athey Truss Wheel Co. 139
Atlas Ball Co.
Auer, C. A.
Austin Co.
Axelson Machine Co. ..... Back Cover

B

B. & A. Specialty Co. 118
Baash-Ross Tool Co. 183
Babcock & Wilcox Tube Co., The
Baker Casing Shoe Co.
Baker Motors, Inc.
Baldwin Chain & Mfg. Co. 12
Barber-Greene Co. 21
Barnickel, Wm. S., & Co. 133
Barnsdall Refining Co.
Bartlesville Supply Co. 120
Beaver Mfg. Co.
Belle City Mfg. Co. 177
Berry's James B., Sons Co.
Bessemer Gas Engine Co. 3
Bignall & Keeler Machine Works
Binks Spray Equipment Co. 186
Black Steel & Wire Co.
Blackmer Pump Co. 187
Blaw-Knox Co. 174
Borden Co.
Botfield Refractories Co.
Bovaird & Seyfang Mfg. Co.
Bovaird Supply Co., The
Braden Co.
Brady Conveyors Corp. 47
Braun, C. F., & Co.
Bridgeport Machine Co. 108-109
Bristol Co. 176
Broderick & Bascom Rope Co. 107
Brokaw, Dixon, Garner & McKee 188
Brooks Engineering Corp.
Brownell Co.
Brown Instrument Co.
Brown & Thomsen 186
Brown Tool Co., Inc.
Bruce-MacBeth Engine Co.
Buckeye Traction Ditcher Co.
Buda Co.
Budd Wheel Co.
Buffalo Gasoline Motor Co.
Burns Tool Co.
Burt Corporation 136
Burt Mfg. Co.
Busch-Sulzer Bros., Diesel Engine Co.
Butler Mfg. Co.
Byers, A. M., Co.
Byron Jackson Pump Mfg. Co., Inc.

C

Campbell, J. A.
Canadian Pacific Railway Co.
Carbondale Machine Co. 117
Caudill, Samuel J. 186
Celite Products Co. ..... Inside Front Cover
Central Steel Co.
Central Tube Co. 185
Chain Belt Co.
Champion Machine & Forging Co.
Chaplin-Fulton Mfg. Co. 184
Chapman Valve Mfg. Co.
Chestnut & Smith Corp. 10
Chicago Bridge & Iron Works
Chicago Pneumatic Tool Co. 123
Chicago Steel Foundry Co.
Clapp, Frederick G. 186
Clark Bros. Co.
Clark, Robert W. 188
Classified Wants 148-149
Cleveland Tractor Co.
Climax Engineering Co.
Coatesville Boiler Works
Columbian Rope Co.
Columbian Steel Tank Co. 115
Columbus Forge & Iron Co.
Columbus Sucker Rod Co. 127
Continental Motors Corp. 129
Continental Supply Co. 40
Cook Paint & Varnish Co. 78-79
Cooper, C. & G., Co.
Cox & Sons Co., The 171
Crane Co. 24
Crane Packing Co. 177
Crown Central Petroleum Corp. 101
Cross Engineering Co.
Cushing, Tim, Tool & Supply Co.

D

D. & B. Pump & Supply Co. 18
Darling Valve & Mfg. Co. 20
Dart, E. M., Mfg. Co.
Davis, G. M., Regulator Co. 128
Day, Roland B. 187
Dayton Pipe Coupling Co.
Dean Bros. Co. 186
Dean Hill Pump Co. 186
Dearborn Chemical Co. 77
De La Vergne Machine Co.
Delta Electric Co.
Detroit Graphite Co.
Diamond Drill Carbon Co. 188
Diamond Drilling & Exploration Co.
Diamond Power Specialty Corp.
Dixon, Joseph Crucible Co. 94
Dodge Mfg. Co.
Donovan Boiler Works, Inc. 112
Dresser, S. R., Mfg. Co. 35
Dunn Mfg. Co. 11
DuPont De Nemours & Co., E. I. 97
Durabla Mfg. Co.

E

Eagle-Picher Lead Co. 3
Eastern Torpedo Co. 185
Eclipse Paint & Mfg. Co. 92
Edwards Valve & Mfg. Co.
Elliott Core Drilling Co.
Empire Refineries, Inc. 114
Emsco Derrick & Equipment Co.
Equitable Meter & Mfg. Co. 57
Eureka Burner Co.

F

Fairbanks-Morse & Co.
Farley Machine Works Co. 16
Federal Supply Co.
Fenwick-Reddaway Mfg. Co.
Fisher Governor Co.
Foamite-Childs Corp.
Fohs, F. Julius 187
Foos Gas Engine Co.
Ford Chain Block Co.
Ford Motor Co.
Fort Worth Laboratories 186
Foxboro Co., Inc., The
Franklin Valveless Engine Co. 72
Frick-Reid Supply Co. 4
Full Crawler Co.

G

Gardner Governor Co. 111
Garlock Packing Co.
Garrett, M. M. 188
Gaso Pump & Burner Mfg. Co. ..... Inside Back Cover
General American Tank Car Corp.
General Motors Truck Co.
General Oil Tools Co.
Gilbert & Barker Mfg. Co.
Gilfillan Machine Works 188
Gomory, W. L. 188
Goodrich, B. F. Rubber Co.
Goodyear Tire & Rubber Co. 17
Gott, H. P., Mfg. Co. 184
Goulds Pumps, Inc. 183
Graham Brothers 59
Graver Corp. 155
Greene, Frank C. 187
Greenspon's, Joseph, Sons Iron & Steel Co. 180
Griscom-Russell Co. 126
Guiberson Corp. 51
Gulf Refining Co.

H

Halliburton Oil Well Cementing Co.
Harrisburg Pipe & Pipe Bending Co. 13
Hazard Mfg. Co.
Heppenstall Forge & Knife Co.
Herald Brothers 188
Hercules Motors Corp.
Hercules Tool Co. 120
Heydrick Mapping Co. 188
Hill, Hubbell & Co. 91
Hills-McCanna Co.
Hinderliter Tool Co.
Homestead Valve Mfg. Co.
Hood, H. H. 188
Hoover Steel Ball Co.
Hope Engineering & Supply Co. 124
Hopkins, Edwin B. 187
Hough, Charles N., Mfg. Co.
Houston Pump & Supply Co.
Hoyt Metal Co.
Hughes Tool Co. 65-157
Humble Oil & Refining Co.
Hunt, Robert W., Co. 188
Huntley & Huntley 186

I

Illinois Glass Co.
Imperial Belting Co.
Imperial Royalties Co.
Ingersoll-Rand Co.
International Derrick & Equipment Co.
International Harvester Co. of America. 8
International Supply Co.
Iron King Mfg. Co. 175

J

Jarecki Mfg. Co.
Jefferson Union Co.
Johns-Manville, Inc. 131
Jones, S. M., Co. 186

K

Kansas City Hay Press Co. 130
Kaw Boiler Works Co. 9
Kellogg, M. W., Co. 171
Kelly, John Eoghan 186
Kelly & Jones Co. 188
Kennedy Valve Mfg. Co.
Kerotest Mfg. Co.
Kerr, John B. 187
Keuffel & Esser Co.
Kewanee Boiler Co.
Key Boiler Equipment Co.
Kirk & Hoover 186

L

Landis Machine Co.
Larkin & Co.
Layne & Bowler Co.
Leidecker Tool Co. 128
Leschen, A., & Sons Rope Co.
Linde Air Products Co. 1
Link-Belt Co.
Longyear, E. J., Co. 187
Lucey Mfg. Corp.
Ludlow Valve Mfg. Co.
Lufkin Foundry & Machine Co.
Lufkin Rule Co.
Lunkenheimer Co.

Mc

McCord Radiator & Mfg. Co. 177
McGregor Working Barrel Co.
McIntosh & Seymour Corp.
McJunkin Supply Co.
McKee, Arthur G., & Co. 167
McNutt, V. H. 187

M

Magnolia Petroleum Co.
Maloney Tank Mfg. Co. 118
Manzel Brothers Co.
Marion Machine Foundry & Supply Co.
Marsh Gauge Pole Co.
Mathieson Alkali Works, Inc.
Matson, George C. 187
Matthews, W. N., Corp. 95
Maverick, Phillip 188
Messimer, H. H. 186
Metric Metal Works
Midwest Piping & Supply Co.
Miller, Max B., & Co., Inc.
Milwaukee Forge & Machine Co. 187
Mineral Exploration Co. 182
Mine Safety Appliance Co.
Moon Manufacturing Co.
Moore, Lee C., & Co., Inc. ..... Front Cover
Mosler Metal Products Corp.
Munn & Co. 187
Murray Rubber Co.
Murray Tool & Supply Co. 196
Myers, F. E., & Bro. Co.

N

National Carbon Co., Inc. 1
National Gas Products Corp. 15
National Lead Co. 81
National Petroleum Engineering Corp. 187
National Petroleum Marketers Assn.
National Supply Co. 113
National Transit Pump & Machine Co. 134
National Tube Co.
National Turnbuckle Derrick Co.
Newton Process Mfg. Co. 33
Norris Bros., Inc. 147
Norris, W. C.
North American Car Co. 168
Northern Fire Apparatus Co.
Northern Oil Information Bureau
Northrup Equipment Co.
Novo Engine Co.
Nuttall, R. D., & Co. 178
Nye Tool & Machine Works 7

O

O'Brien Steel Construction Co. 182
Ohio Steel Foundry Co.
Oil Conservation Engineering Co. 19
Oil Country Specialties Mfg. Co.
Oil Insurance Association 143
Oil Well Supply Co. 54-55
Okell Well Machinery Co.
Oklahoma Steel Casting Co.
Okmulgee Boiler & Welding Works
Oxweld Acetylene Co. 1

P

Paint Products Co. 87
Pangere & Logan Co. 93
Parkersburg Machine Co. 183
Parkersburg Rig & Reel Co. 22
Partridge-Scotford Stencil Co.
Patrick, R. S. 181
Pattin Brothers Co.
Penberthy Injector Co. 180
Pennzoil Co., The
Petroleum Appliance Co.
Petroleum Iron Works 6
Pforzheimer, Carl H., & Co.
Pickering Governor Co.
Pittsburgh Boiler & Machine Co.
Pittsburgh-Des Moines Steel Co.
Pittsburgh Meter Co. 172
Plymouth Cordage Co.
Porter & Co. 37
Powell, William, Co.
Power Mfg. Co.
Power Piping Co. 173
Power Plant Equipment Co. 100
Power Specialty Co. 121
Prescott Co., The
Prest-O-Lite Co., Inc., The 1
Progressive Brass Mfg. Co.
Pure Oil Co. 116
Pyle-National Co. 137

R

Randerson, R. S. 168
Ranney Oil Mining Co. 185
Ratigan, J. P., Co. 173
Reading Iron Co. 23
Reading Steel Casting Co., Inc.
Reed Roller Bit Co. 69
Regan Forge & Engineering Co. 60-61
Reid, Joseph, Gas Engine Co. 175
Republic Flow Meters Co.
Republic Iron & Steel Co. 110
Republic Supply Co. 119
Rich, John L. 186
Ring, DeWitt T. 188
Riter-Conley Co. 188
Robinson, A.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc. 146
Ross-Meehan Foundries 185
Ryerson, Joseph T., & Son 185

S

Safety Pulling Machine Co.
Shaffer, J. E., Co.
Shaffer Tool Works
Sharples Specialty Co.
Sheffield Steel Corp.
Sherwin-Williams Co.
Shippers' Car Line, Inc. 172
Simplex Equipment Co. 103
Sinclair Refining Co. 161
Sivyer Steel Casting Co.
Skelly Oil Co.
Smith, A. O., Corp.
Smith, Gene R. 187
Smith Separator Co. 62
South Chester Tube Co.
Southern Cornice Works
Southwestern Engineering Corp.
Southwestern Engineering Co., Inc.
Spang & Co.
Spang, Chalfant & Co., Inc. 71
Spence Machine Co. 185
Spencer Trailer Co. 49
Stalder, Walter 187
Stanley Belting Corp. 182
Star Drilling Machine Co.
States Engineering Co., The 179
Stearns-Roger Mfg. Co.
St. Louis Surfacer & Paint Co. 74
Strom Steel Ball Co. 132
Sullivan Co., The
Sullivan Diamond Core Drills 188
Sullivan Machinery Co. 179
Superior Tube Co.
Swartwout Co., The

T

Taylor Instrument Co.
Templeton, Kenley & Co., Ltd.
Texas Company, The 98-99
Thompson, V. A. 187
Timken Roller Bearing Co.
Titusville Forge Co.
Titusville Iron Works
Tnemec Paint & Oil Co. 82
Toledo Pipe Threading Machine Co. 181
Trimont Mfg. Co.
True Tagg Paint Co. 89
Trumble Gas Trap Co.
Truscon Steel Co. 141
Twin Disc Clutch Co.

U

United Alloy Steel Corp. 135
United Iron Works, Inc. 174
United States Cast Iron Pipe & Foundry Co.
United States Rubber Co.
Universal Oil Products Co. 43
U. S. Tool Co.

V

Van Couvering, M. 186
Victaulic Co. of America
Vogt, Henry, Machine Co.
Volz Engineering Equipment Co.

W

Wall Rope Works, Inc.
Walsh & Weidner Boiler Co.
Walworth Mfg. Co.
Warren Petroleum Co.
Waukesha Motor Co. 45
Wescott & Greis
Western Machinery Co.
Western Supply Co.
Westinghouse Electric & Mfg. Co.
Wheeling Steel Corp.
White Co. 5
Wickwire Spencer Steel Co. 14
Wico Electric Co.
Widdell Engineering Co. 167
Williams, J. H., & Co.
Williamsport Development Co.
Williamsport Wire Rope Co. 53
Wilson Oil Tools Corp. 66-67
Wilson Welder & Metals Co.
W-K-M Company, Inc.
Wood & Wood 186
Worthington Pump & Machinery Corp.
Wright, Harry F. 188
Wright Mfg. Co. 188

Y

Yale & Towne Mfg. Co.

Z

Zero Hour Torpedo Co.

WHAT AND WHERE TO BUY—PAGES 189-190-191